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Railway Age

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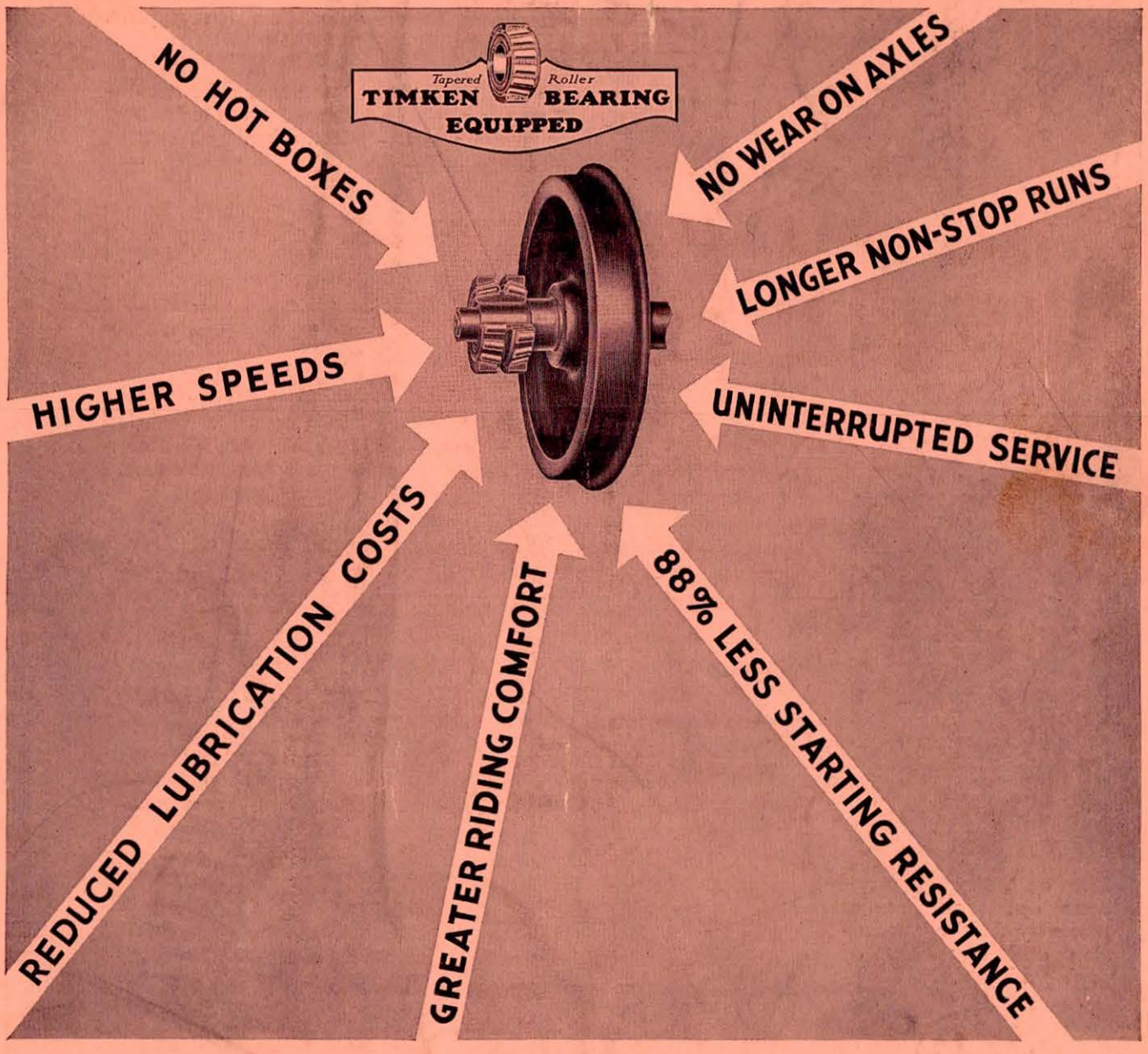
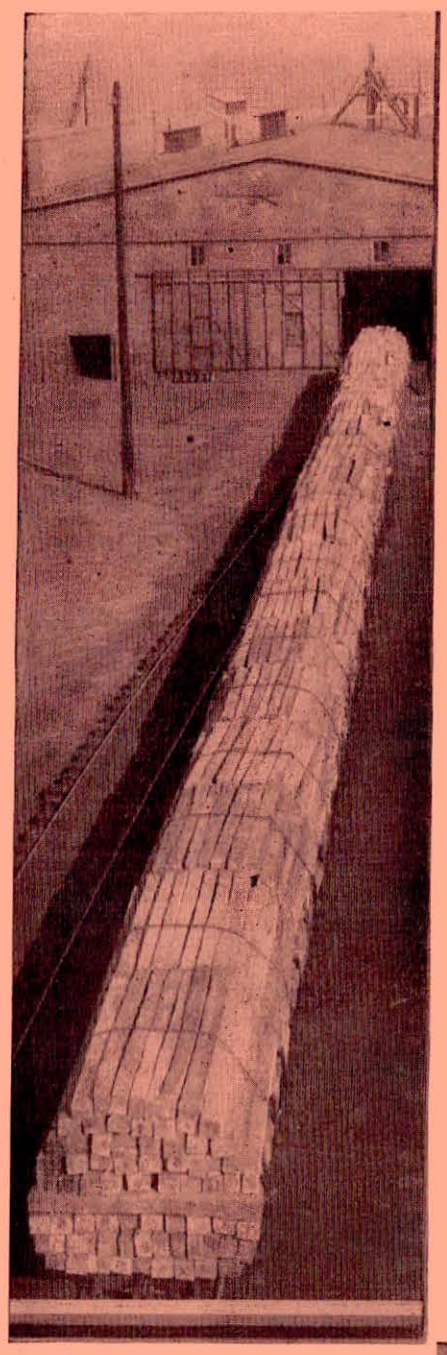


You need all of these advantages in your rolling stock now more than ever before. Specify Timken Bearing Equipped.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* BEARINGS



TREATMENT
That Vastly Prolongs The Service Life of Ties

YOU remember when the life of ties on many railroads averaged less than ten years. Now a *good chemical treatment* makes them average more than twenty years. Service records prove this.

But, it must be a good treatment—accurate and uniform penetration of high grade preservatives, where the full quantity of oil specified stays in the ties. — Just the kind of treatment you get at *International.*

International plants are equipped for treatment by any standard process. Indicating gauges insure accuracy in the control of temperatures. steam pressure and vacuum and in the injection of the preservatives. Supplementing and checking these gauges is a complete set of automatic self-recording gauges which furnish a continuous and permanent autographic story of each charge of *International* ties.

The treating operations are conducted by engineers who have made a life study of timber and its treatment. Technical observations, such as creosote analysis, moisture determinations, and depth of penetration are made by graduate chemical engineers.

Good treated ties are the answer to your biggest maintenance problem. Specify *International* —you get sound timber and good treatment.

International

CREOSOTING & CONSTRUCTION CO.

PRODUCERS OF HIGH GRADE TREATED TIES

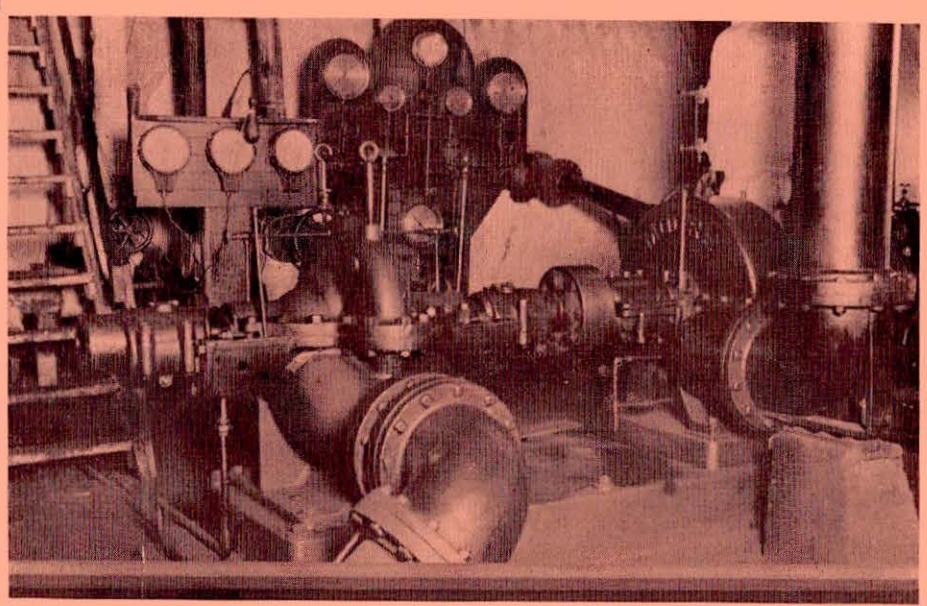
Galveston - Beaumont - Texarkana

The efficiency of large scale operation assures economy in the production and treatment of high quality ties.

3C1
The International Dating Nail

This dating nail is your assurance that the tie is a Standard A.R.E.A. Specification Tie.

Full Size
Sound Timber
Properly Seasoned
Scientifically Treated



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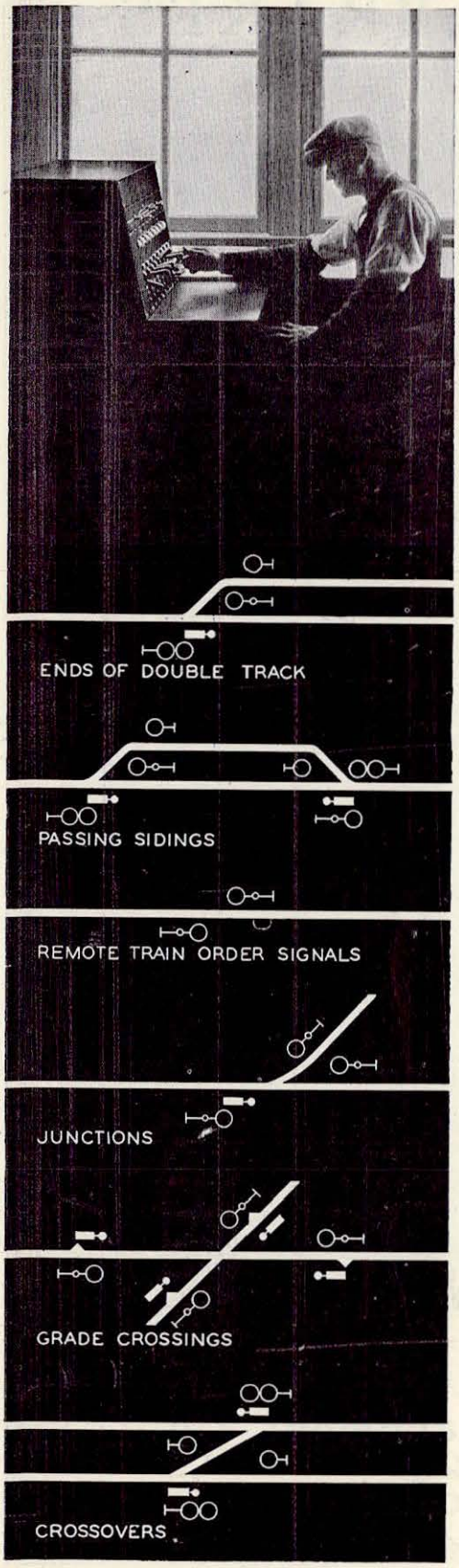
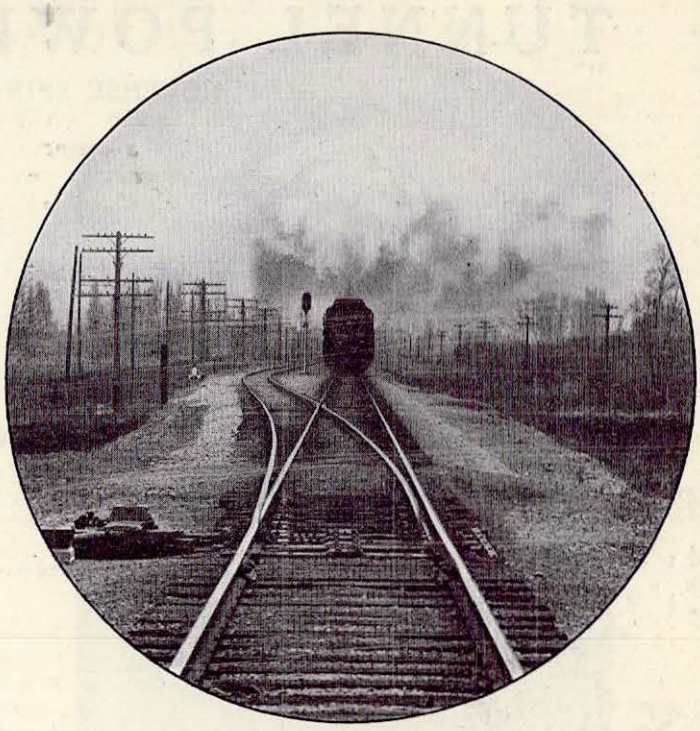
REMOTE SWITCHES ARE ASSETS





Sidings have been placed at various points throughout the length of a division in order to expedite and facilitate the movement of traffic over that division by providing a means for running high speed trains around drags and allowing opposing trains to meet.

It is therefore evident that the continued use of these sidings with hand thrown switches is uneconomical and defeats the purpose for which they were installed.

A G-R-S ac type machine for the remote control, over any distance, of siding switches assures the liquidation of these assets.

Power operation institutes nonstop meets and take-siding moves, increases train speeds, reduces delays, reduces fuel consumption, and permits increased train tonnage; all these resulting in decreased operating costs.

Now is the time to utilize the high potential value of siding facilities. Later, coordinate all facilities by expansion and direct trains entirely by signal indications.

Write our district engineers concerning your specific problem. You will incur no obligation.

GENERAL RAILWAY SIGNAL COMPANY

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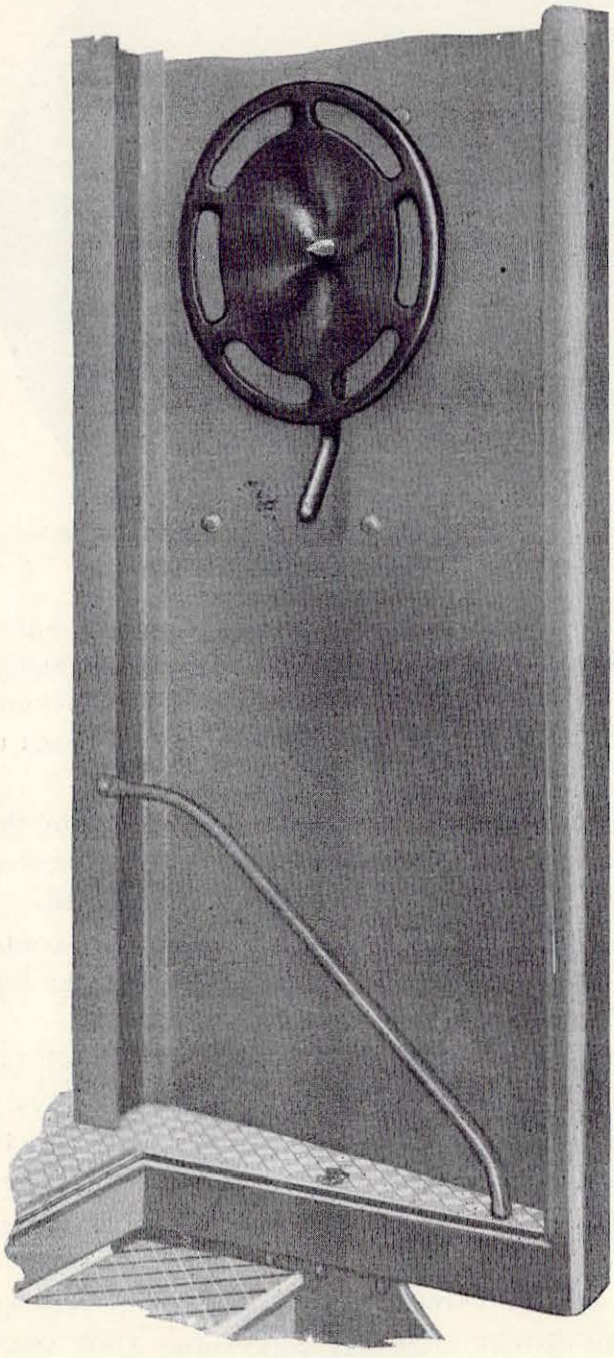
A-868

Universal

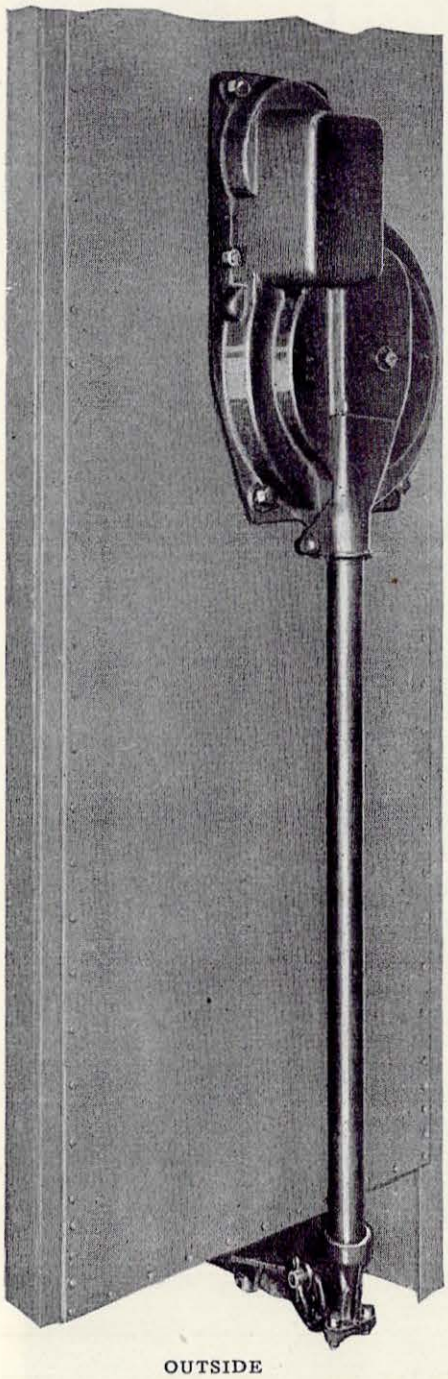
TUNNEL POWER BRAKES

"NON" REVERSE SPINNING WHEEL



INSIDE

FOR VESTIBULE CARS



OUTSIDE

Universal Draft Gear Attachment Co.

332 South Michigan Ave., Chicago

Royal Bank Building, Montreal, Canada

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office

Vol. 91 December 5, 1931 No. 23

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Reducing Expenses in the Office ..... Page 852

Article No. 22 of the Operating Economy Series, showing how a scientific study of the work to be done and installation of modern office equipment will effect large savings, and at the same time improve performance.

Centralized Traffic Control on the Boston & Maine 860

A. R. Bacon, field signal engineer, B. & M., describes that road's most recent C. T. C. installation, which covers 76.7 route miles and 162 track miles on the Fitchburg division.

Patents and Railway Progress 870

Charles L. Howard, assistant general counsel, Western Railroad Association, in addressing the Western Railway Club, states that "success in selling railroads to the public, and in selling to railroads, will depend upon new and greater railroad inventions."

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The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

ON VELVET

IN A MONTH

Earn back your original investment in a month. That's our proposition to you—then you are "on velvet"... 1200 per cent profit in a year and the same profit for the years to follow. Install the Ramapo 3-in-1 Automatic Safety Switch Stand (model 100-A) at the ends of double track and passing sidings.

By eliminating stops and starts for switching operations the 3-in-1 saves time, energy and labor. At an average location this saving will pay for the Stand and its installation during the first month. Each month thereafter this saving is clear profit. There are three mechanisms combined in one compact housing: The switch stand spindle is connected rigidly to the switch points, assuring positive target indication for the position of switch points and rigid-throw for hand operation; two automatic double-coil springs which return the switch points after trailing train has passed; a retarding oil-buffer which prevents the return of the switch points between successive pairs of wheels. Tests have proved conclusively that this combination has answered the problems of traffic through turnouts at the ends of double track and passing sidings.

More than ever is it necessary for railroads to discover further means for reducing operating and maintenance overhead... This is your opportunity to assist... your duty to get the facts on the 3-in-1 Switch Stand by return mail. No obligations. Write your nearest Ramapo office.

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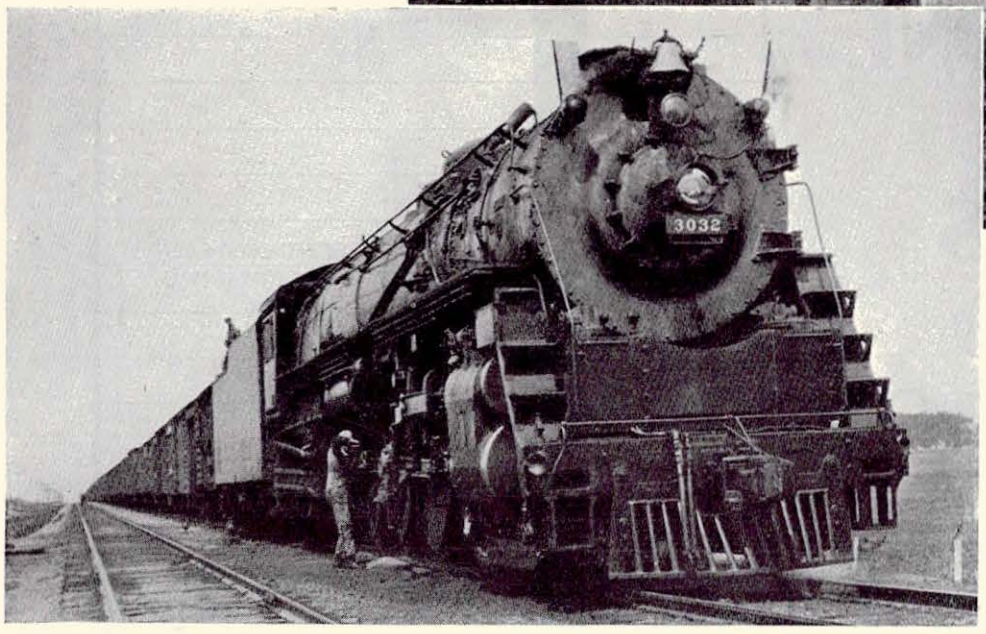
RACOR TRADE MARK

SPECIALISTS IN TRACK-WORK MATERIALS

Today's Demand



Speed and Tonnage

A CANAL BOAT, propelled by animal power, however picturesque, could not meet the transportation demands of today. Its carrying capacity is too limited—more than that its rate of progress is too slow.

Today's demand in railroad transportation calls for SPEED AND TONNAGE—large locomotives to operate heavy trains on fixed schedules so as to insure on-time arrival at destination.

And just as a train of this kind differs from the "drag freight" of a few years ago, so does the Strictly Modern Locomotive differ from its predecessor.

Small-wheeled locomotives of limited steaming capacity are inadequate for the needs of today. Where such power has been replaced by up-to-date high-wheeled, big-boilered units, the fact is being demonstrated that . . . .

It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS 1831 1931

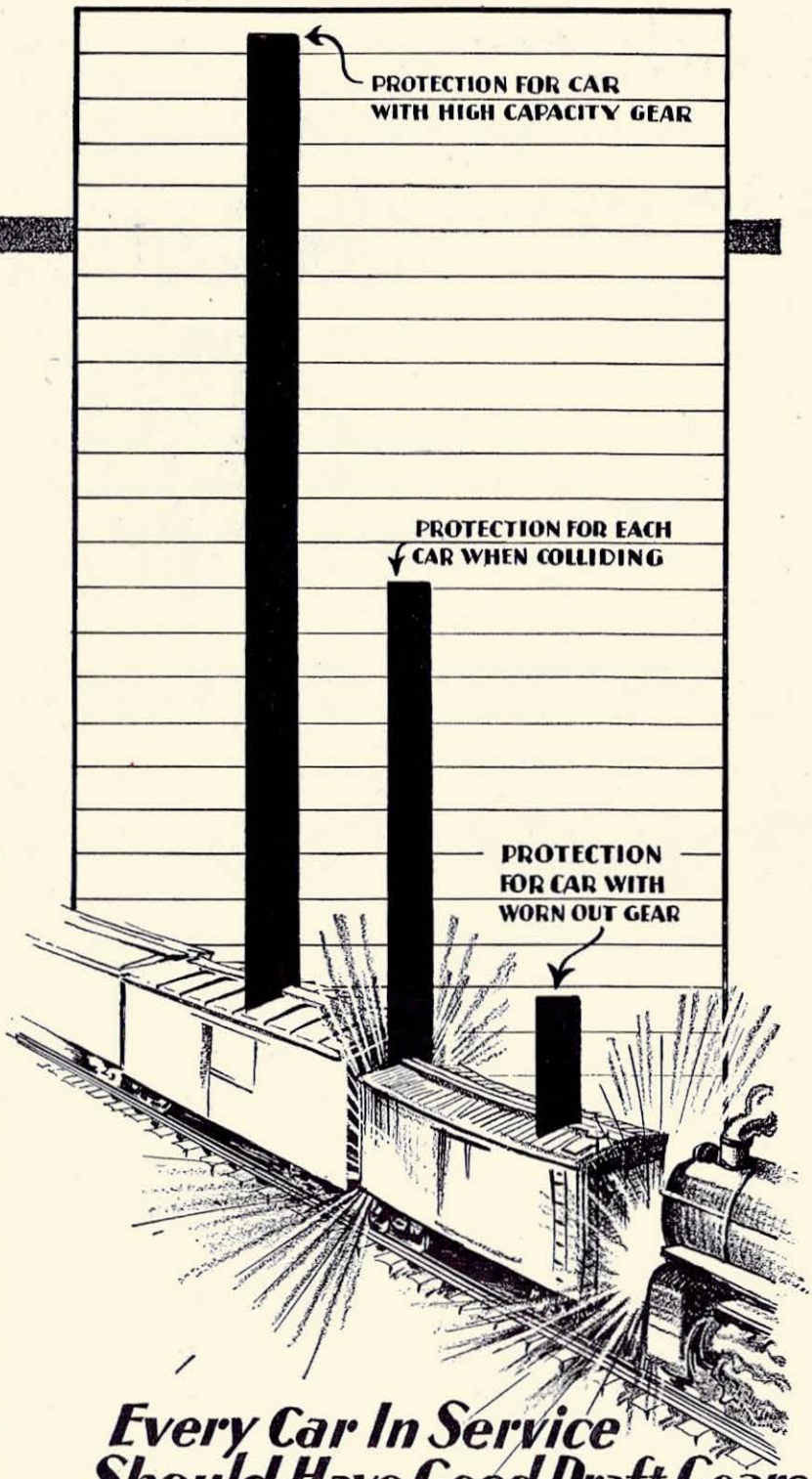
THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

WHEN ONE DRAFT GEAR IS CALLED UPON TO DO THE WORK OF TWO

When two cars come together, the protection they get is the sum of the capacities of the two draft gears which come into action.

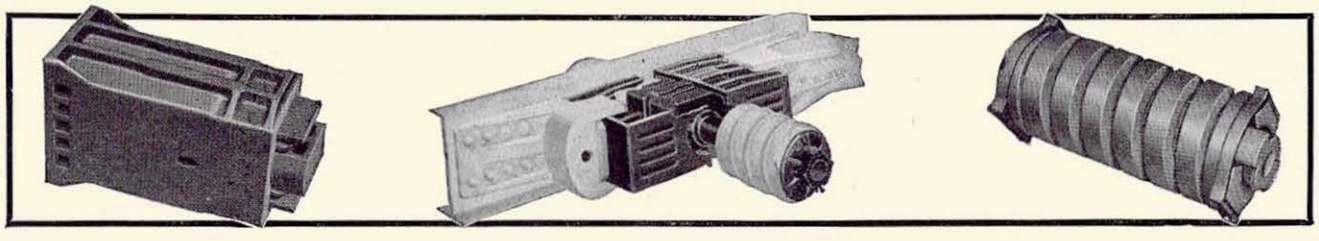
If one of these gears has little or no capacity, the other gear is called upon to do the work of two. Consequently, when the capacity of the good gear is reached, each car is getting only about half the protection it should have.


PROTECTION FOR CAR WITH HIGH CAPACITY GEAR
PROTECTION FOR EACH CAR WHEN COLLIDING
PROTECTION FOR CAR WITH WORN OUT GEAR

Every Car In Service Should Have Good Draft Gears

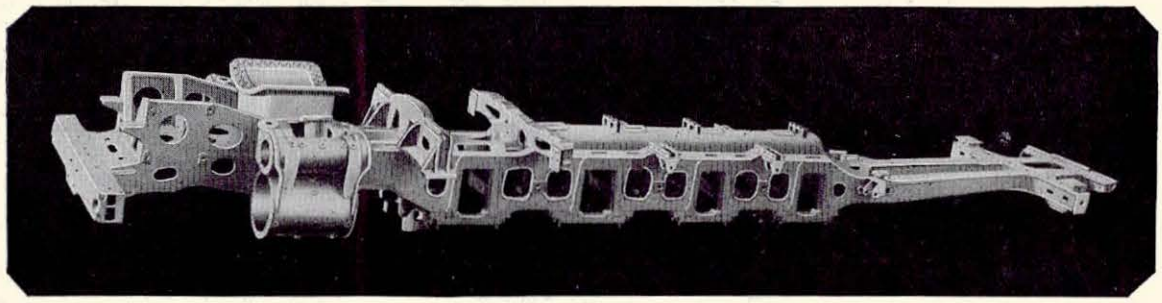
CARDWELL-WESTINGHOUSE CO.

332 S. MICHIGAN AVE. » » CHICAGO, ILL.



Present Day Railroad Conditions Require Modern High Speed Powerful Locomotives

COMMONWEALTH ONE-PIECE LOCOMOTIVE BEDS PROVIDE THE NECESSARY STRONG FOUNDATION



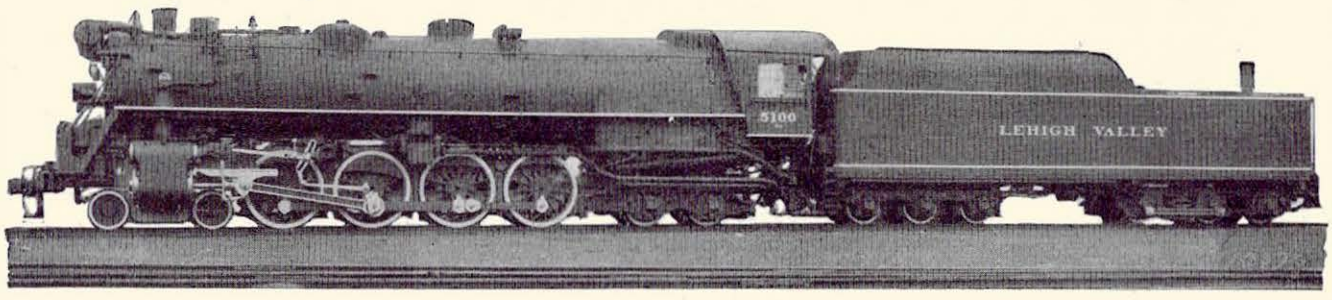
ONE-PIECE LOCOMOTIVE BED WITH INTEGRAL CYLINDERS AND AIR RESERVOIR

Increased Strength

Simplified Design and Construction

Long Term Satisfaction and Maintenance Economy

(Locomotive Beds in Use on Thirty-Six Railroads)

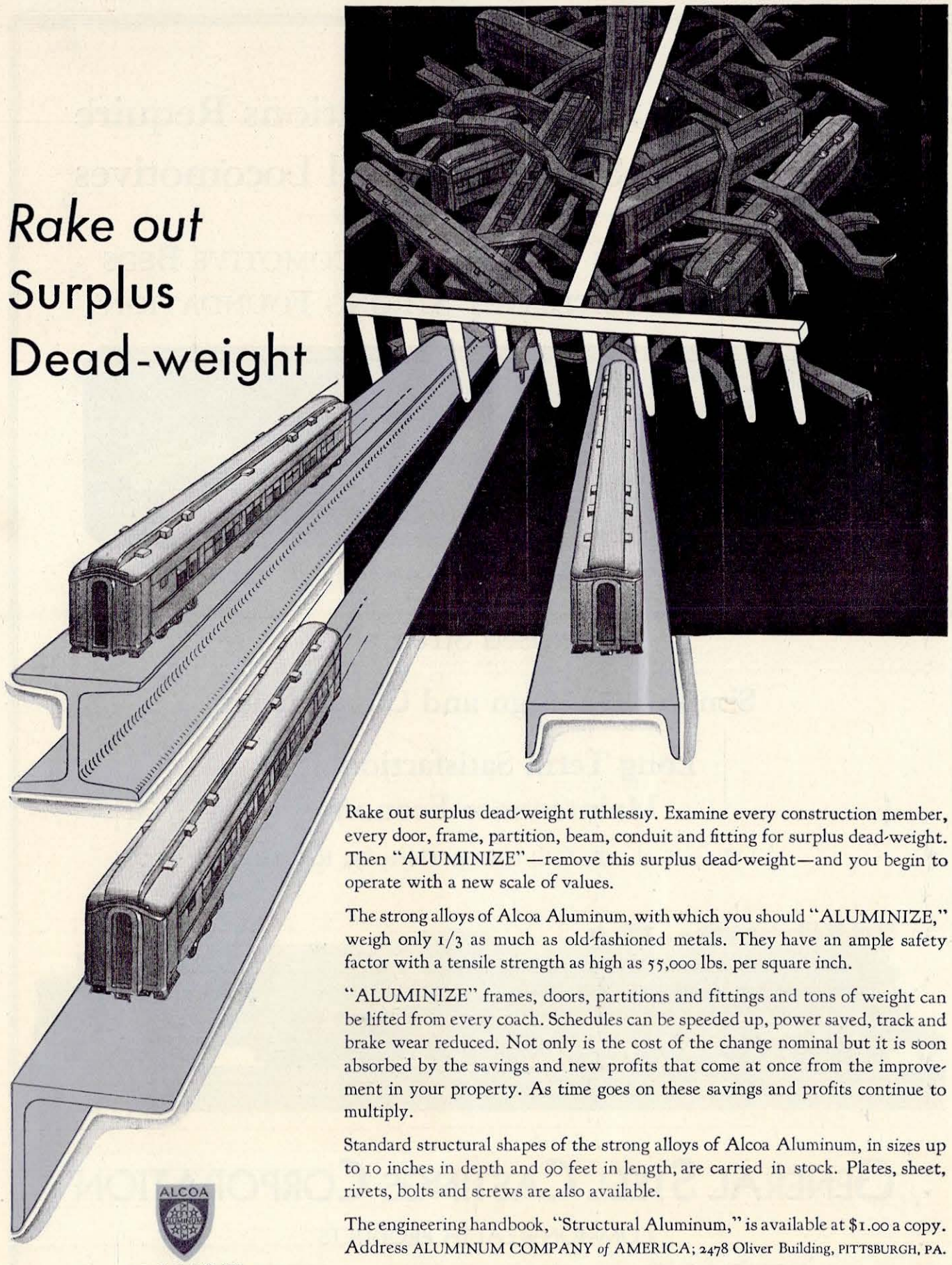


GENERAL STEEL CASTINGS CORPORATION

COMMONWEALTH PRODUCTS

EDDYSTONE, PENN. GRANITE CITY, ILL.

Rake out Surplus Dead-weight



Rake out surplus dead-weight ruthlessly. Examine every construction member, every door, frame, partition, beam, conduit and fitting for surplus dead-weight. Then "ALUMINIZE"—remove this surplus dead-weight—and you begin to operate with a new scale of values.

The strong alloys of Alcoa Aluminum, with which you should "ALUMINIZE," weigh only 1/3 as much as old-fashioned metals. They have an ample safety factor with a tensile strength as high as 55,000 lbs. per square inch.

"ALUMINIZE" frames, doors, partitions and fittings and tons of weight can be lifted from every coach. Schedules can be speeded up, power saved, track and brake wear reduced. Not only is the cost of the change nominal but it is soon absorbed by the savings and new profits that come at once from the improvement in your property. As time goes on these savings and profits continue to multiply.

Standard structural shapes of the strong alloys of Alcoa Aluminum, in sizes up to 10 inches in depth and 90 feet in length, are carried in stock. Plates, sheet, rivets, bolts and screws are also available.

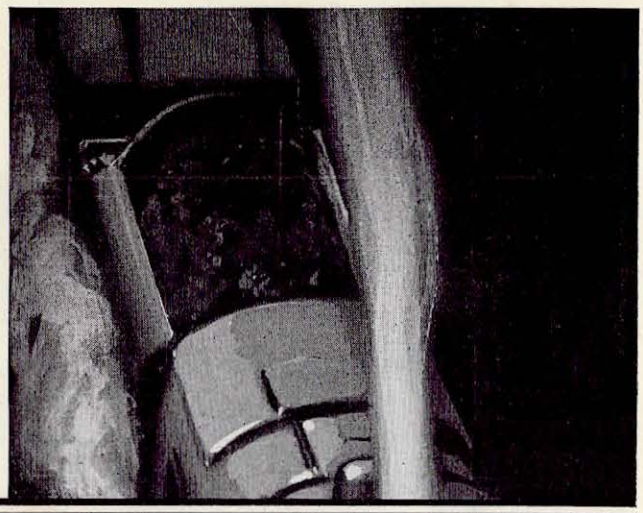
The engineering handbook, "Structural Aluminum," is available at $1.00 a copy. Address ALUMINUM COMPANY *of* AMERICA; 2478 Oliver Building, PITTSBURGH, PA.

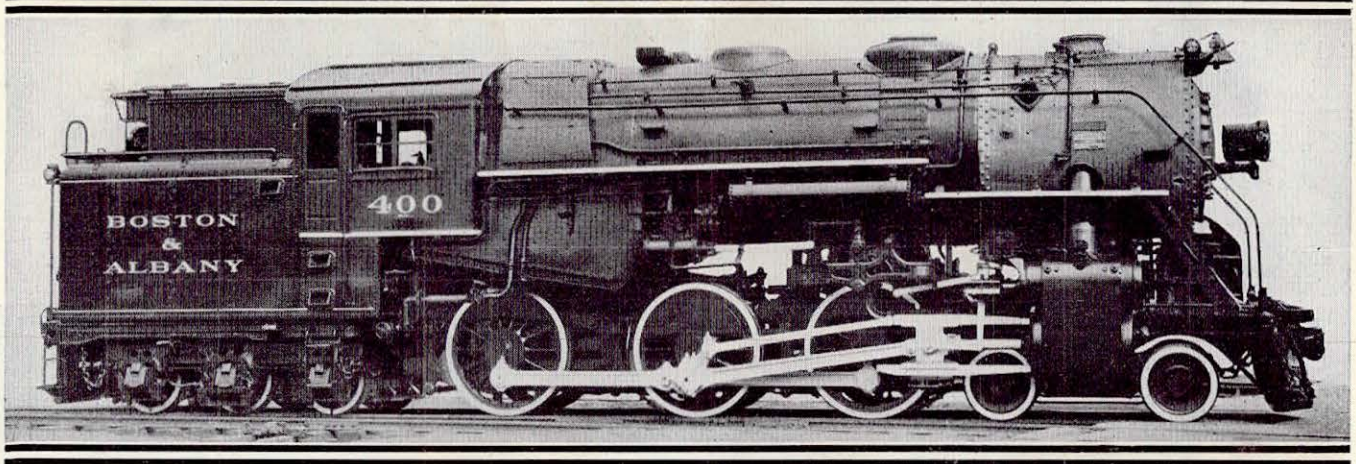
ALCOA

REG. U. S. PAT. OFF.

ALCOA ALUMINUM

balanced braking for MODERN SUBURBAN SERVICE

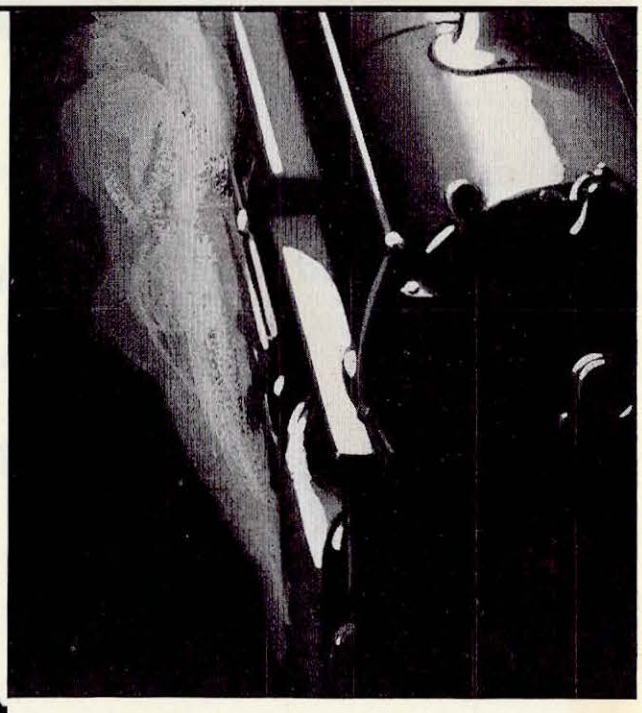




FREQUENT stops are a feature of suburban service. Short smooth stops as well as quick starting are necessary.

Fast schedules must be maintained. To this end, Simplex Clasp Brakes are a necessity.

With two brake shoes per wheel instead of one the Simplex Clasp Brake produces maximum retarding effect with minimum wear on truck and journal parts - affords smooth braking with less heating of brake shoes and reduces the number of slid flat wheels. It is an essential part of modern railway equipment.

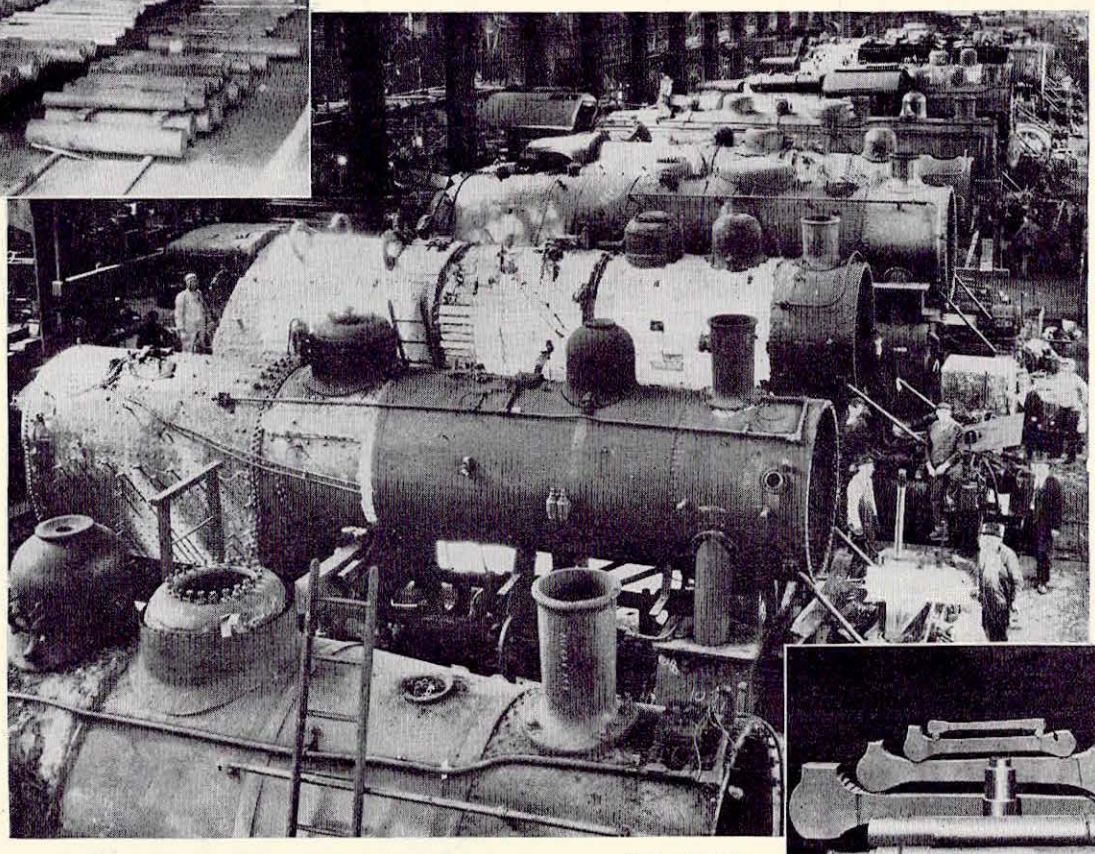


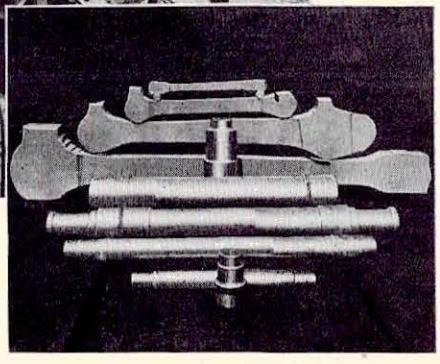
ASF

SHORT SMOOTH STOPS

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS





Ewing Galloway

The dependability and longer life of "Standard" forgings minimize the necessity of repairs and help to keep the rolling stock out of the repair shop.

Tires
Rolled
Wheels
Steel Tired
Wheels
Forgings
Steel
Castings
Billets

STANDARD STEEL WORKS COMPANY

GENERAL OFFICE & WORKS: BURNHAM, PENNA.

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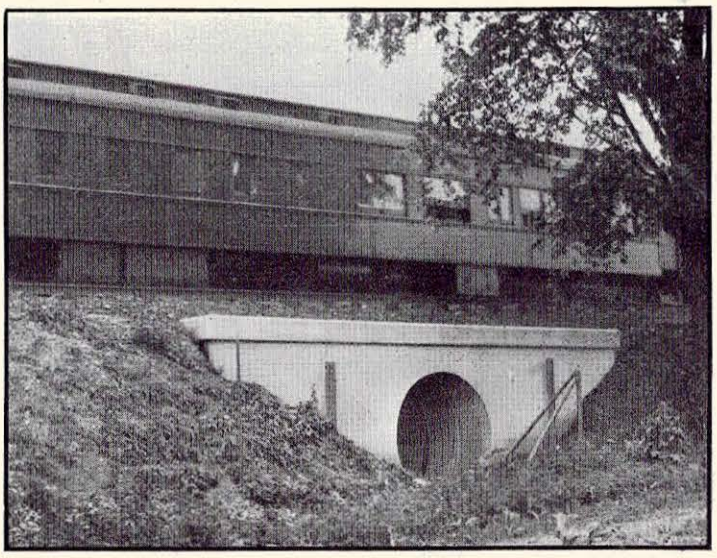


Strength to spare—for many years of trouble-free service. A 72-inch Armco Culvert under a railroad in Ohio.

SAFER!

STRONGER!

MORE ENDURING!

ARMCO

THROUGHOUT America, many railroads have abandoned their experiments with culverts and settled upon Armco Corrugated Iron Pipe as the *logical* product . . . logical because proved by every test to be *safer*—safer because stronger—and *longer-lasting* because made of pure iron.

Some of the greatest railroads in the United States use Armco Culverts exclusively! **Their preference is based strictly on the *safe economy* which this champion product assures. They *know* that Armco Culverts hold the record for durability among culverts of their type—more than 25 years, to date, in "Nature's laboratory."**

In 1932 other railroads will increase their use of Armco Culverts, while still others—now convinced by their own tests and those conducted by engineering authorities—are changing over to this uniformly pure iron drainage product.

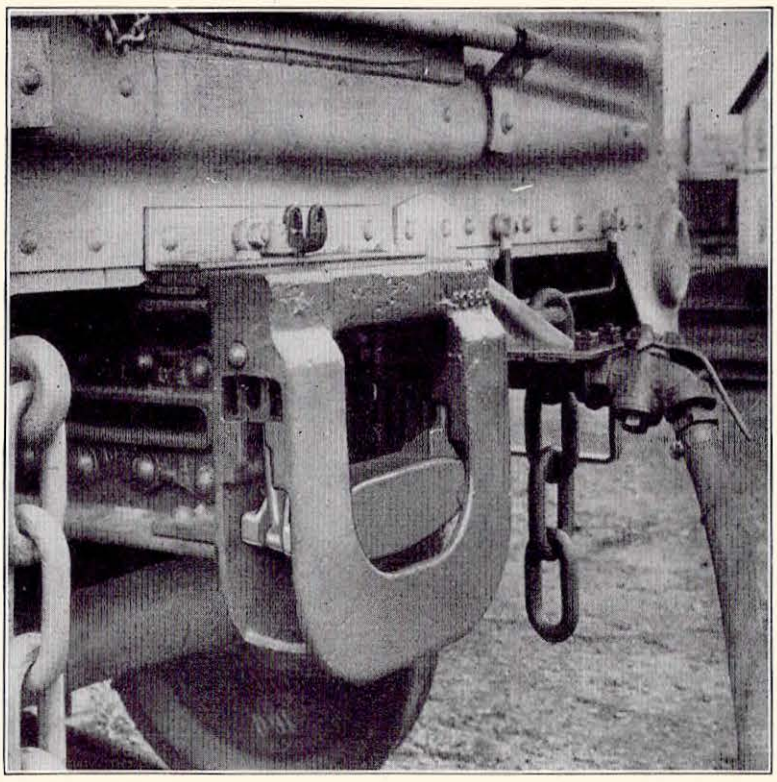
Facts on the performance of various kinds and types of pipe verify the superiority of Armco Culverts. Armco engineers in your vicinity, or Drainage Headquarters, will gladly point out the advantages that will be secured by adopting this pipe.

ARMCO CULVERT MANUFACTURERS ASSOCIATION, *Middletown, Ohio*

ARMCO *Culverts*

ARMCO CULVERTS and drains are manufactured from the Armco Ingot Iron of the American Rolling Mill Company and always bear its brand.

© 1931, ACMA

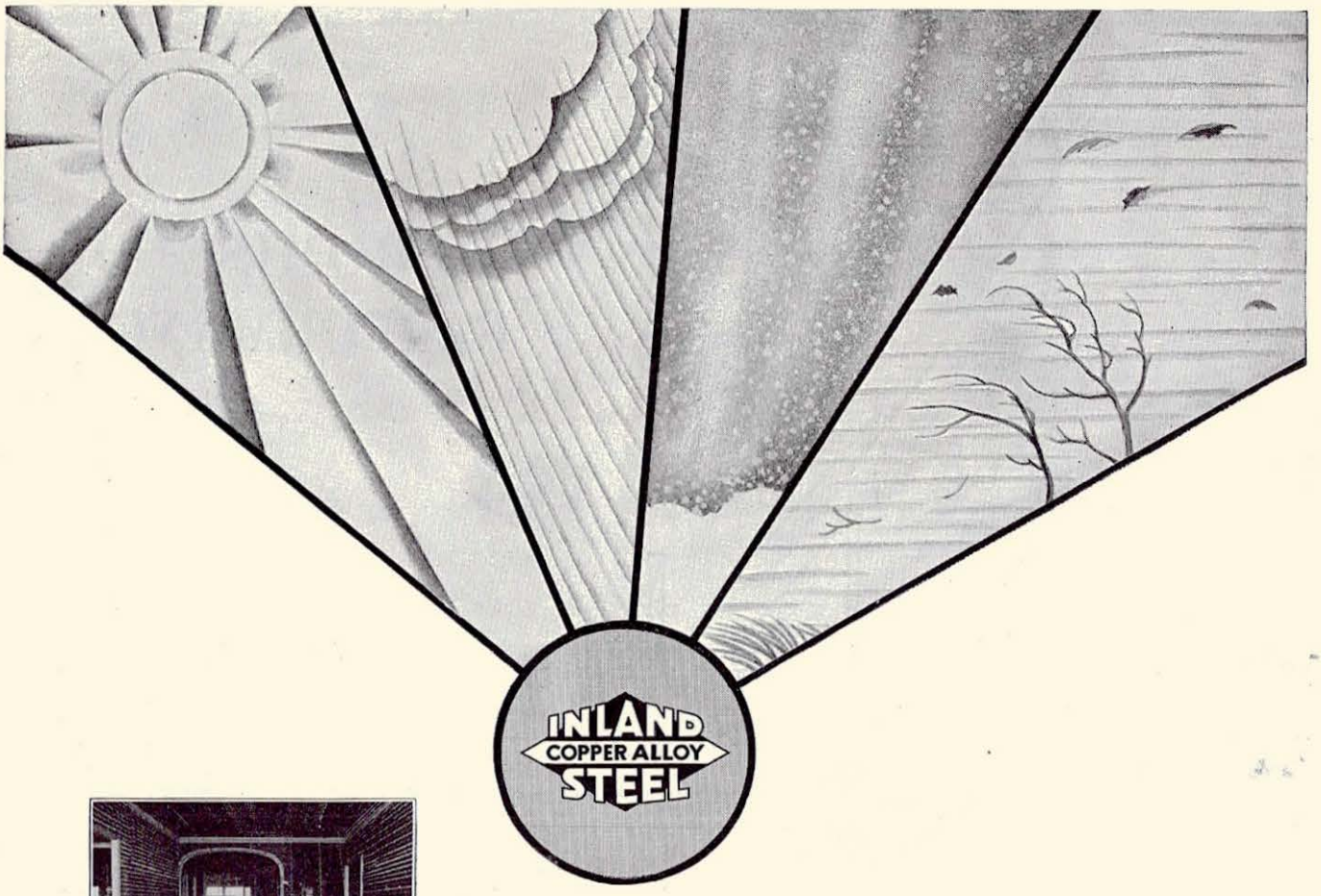


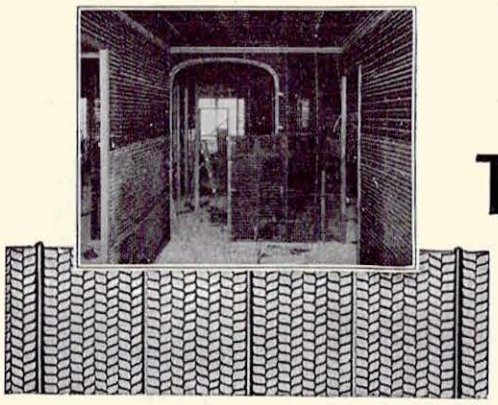
Excess Friction

Sharp flanges and excessive side friction at the rail are very common. Much can be done to relieve this condition by using the Union Centering Device. It eliminates the frictional side thrust of the coupler shank.

UNION METAL PRODUCTS COMPANY

NEW YORK-CHICAGO
ST. LOUIS · WASHINGTON · RICHMOND
SAN FRANCISCO · KANSAS CITY
HOUSTON · MONTREAL





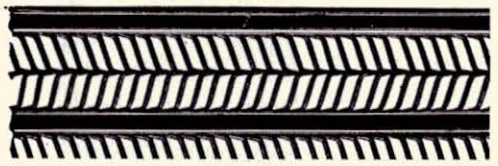
Through many cycles of seasons IT ENDURES

LOCOMOTIVE jackets, roofs, agricultural machinery, tanks—it is their job to be "on the job" in any weather. But weather is hard on ordinary steel, robbing it of full earning power.

For little more than the same expenditure, such equipment can be made of Inland Copper-Alloy Steel, cheerfully granted by highest authority to be the best type of corrosion-resisting steel produced. Not only does Inland Copper-Alloy Steel last far longer, but it cuts maintenance costs sharply. Less painting and patching are required; equipment stays in shape longer, it does not dent, bend or bulge so easily.

"The most for the money" is one sure way to make sales. And using Inland Copper-Alloy Steel for exposed parts or wherever corrosion is a problem is one sure way to increase the value of your product. INLAND STEEL COMPANY, 38 South Dearborn Street, Chicago, Illinois.

Another Use for Inland Copper Alloy



Metal Lath Products

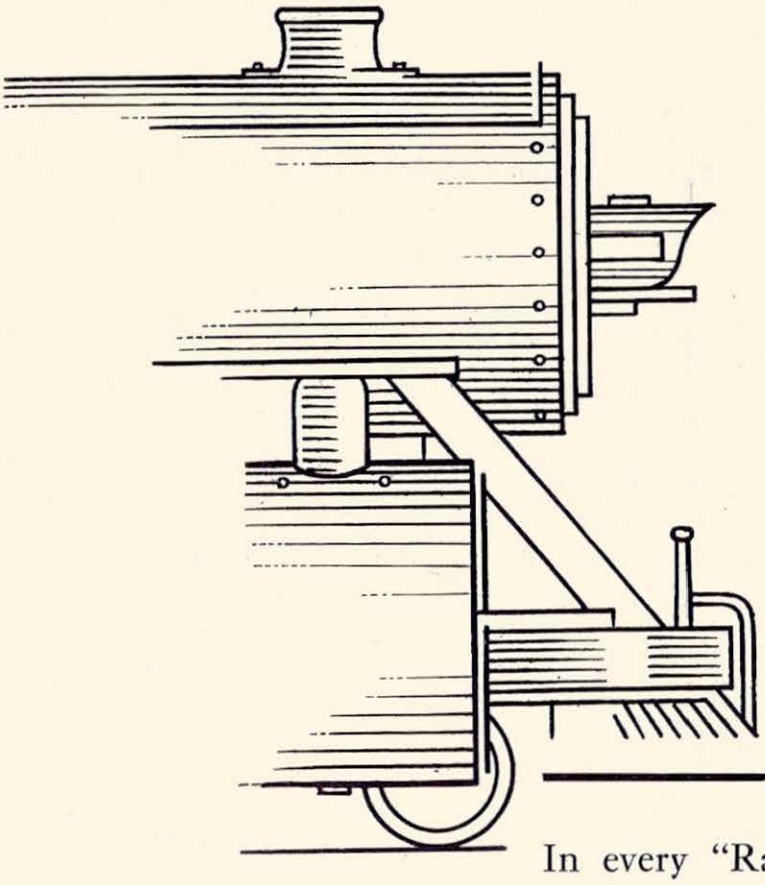
Metal Lath is coming into popularity as a base for all types of plain and ornamental plastering as well as fire-proofing because of its strength, durability, compactness. And because leading producers find Copper-Bearing Steel "has been proven by tests over a number of years as superior in resisting corrosion and acid actions," they use *Inland* Copper-Alloy Steel for their lathing.

Save with Steel

INLAND
ABLE SERVANT OF THE CENTRAL WEST
STEEL

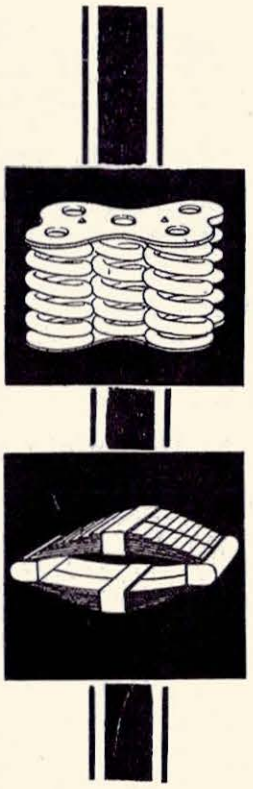
Sheets Piling Bands
Plates Rivets Billets

Structurals Bars Rails
Track Accessories



A PROMISE OF PERFORMANCE

In every "Railway Steel Spring" product, whether it be tires, wheels, or springs, is that "quality" which has been proved by the test of time. For "Railway Steel Spring" products combine not only the highest quality of materials, the use of the most modern machinery and the best of workmanship, but also the result of long years of practical railroad experience.



Railway Steel-Spring Company

30 CHURCH ST., NEW YORK

Branch Offices:

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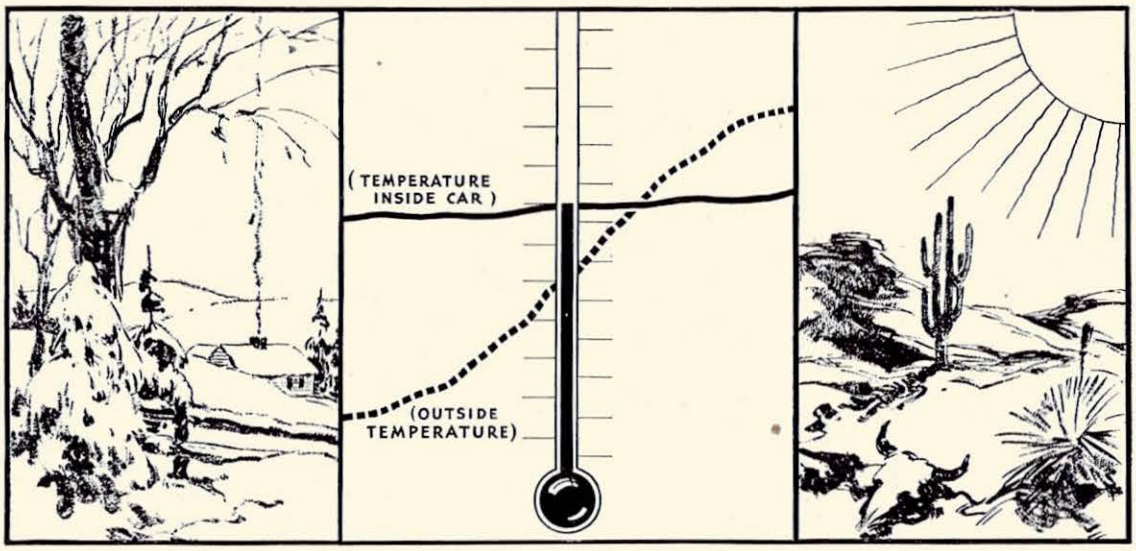
St. Paul, Minn.	Washington, D. C.	Cleveland, Ohio	Denver, Colo.	San Francisco, Cal.

AIR CONDITIONING



A COOLING system for your passenger cars must be of sufficient capacity to produce comfortable temperatures under extreme conditions of high outside temperature and humidity.

Under such conditions the system must cool at a rate equivalent to that of an ice-making machine producing five tons of ice every twenty-four hours—not a job for a miniature plant.

The equipment which we install has ample capacity for cooling and is combined with the heating system so that regardless of outside conditions it supplies to your passengers an abundance of clean, fresh air of the proper temperature and relative humidity.

Noise is largely eliminated by this method of ventilation which permits the windows to remain closed.

All of these advantages are obtained with the minimum expenditure of locomotive power with our apparatus due to the high efficiency of the mechanical and electrical devices, of which it is comprised.

See our advertisements on this subject in the November 21 and 28 issues

PULLMAN CAR & MANUFACTURING CORPORATION

BUILDERS

General Offices: Chicago, Illinois

Pacific Coast Sales Office:
2910 RUSS BUILDING
San Francisco, Cal.

Washington Sales Office:
829 MUNSEY BUILDING
Washington, D. C.

Birmingham Sales Office:
WEBB CRAWFORD BUILDING
Birmingham, Ala.

ECONOMY—IS THE WATCHWORD

TODAY'S standard of wheel economy and safety is the single plate Chilled Tread Wheel of TODAY.

Chilled Tread Wheels

From both the chemical and physical standpoint possess inherent properties found in no other wheel.

The wearing surfaces of flange and tread have sufficient bearing power to carry the heaviest loads without permanent deformation, and have a maximum resistance to abrasion.

The metal of the tread and flange has a maximum wearing value.

The wearing surface of the flange and tread causes the least abrasion to the rail.

It is easily applied and removed, and requires a minimum of shop appliances.

Annealing practices followed by the manufacturers assure soft plates giving greater resistance to the thermal stresses developed by the most severe brake action, and soft hubs which are easily bored and give minimum mounting cost.

The single plate chilled tread wheel* is another way of saying *"Wheel Economy."

Better Every Year

A slogan and a fact based upon definite laboratory and foundry programs.

FOR THE 70-TON CAR THE 850-LB. CHILLED TREAD WHEEL—THE HEAVIER THE CAR CAPACITY THE GREATER THE FACTOR OF SAFETY.

CHILLED TREAD WHEELS

A. R. A. Standards

650-lb. for 30-ton Cars—700-lb. for 40-ton Cars—750-lb. for 50-ton Cars—850-lb. Wheel for 70-ton Cars

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS
1847 McCORMICK BUILDING, CHICAGO, ILLINOIS

DEARBORN LABORATORIES FIND THE SOLUTION OF ANOTHER SERIOUS WATER PROBLEM

Keep Closed Type Feed Water Heaters Constantly at 100% Efficiency

Dearborn
TRADE MARK REGISTERED

TANNIN BRICK NO. 4

Keeping closed type feed water heater equipment at maximum efficiency has required constant care. Even a thin layer of scale in the small copper tubing reduces the heater's efficiency materially in its function of raising water temperature from around 50° F. to 230° F. during its few seconds travel through the heater. The Dearborn Tannin Brick No. 4 placed in the tender dissolves during a period of 10 hours producing the following results:

—prevents the formation of scale and makes unnecessary the periodic circulation of cleaning solutions through feed water heaters;

—makes unnecessary the periodic removal of heater bundles from closed type feed water heaters;

—enables you to carry a higher boiler water concentration without foaming or priming;

—prevents the crystallization into scale, of lime and magnesium salts by keeping them, after precipitation, in a soft sludge form, so they can be readily removed from the boiler by the use of the blow-off or at time of washout;

—retards pitting and corrosion;

—overcomes the injurious effects of softened water, thereby eliminating all roundhouse work on boiler appurtenances.

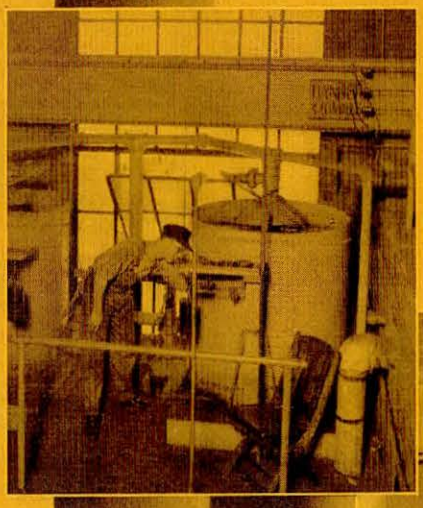
The Dearborn Tannin Brick No. 4 can be used successfully with all types of waters and in conjunction with other methods of water treatment. Let us demonstrate the remarkable results of this new product to you. Address us at 310 S. Michigan Ave., Chicago; 205 E. 42nd St., New York; 2454 Dundas St., W., Toronto.

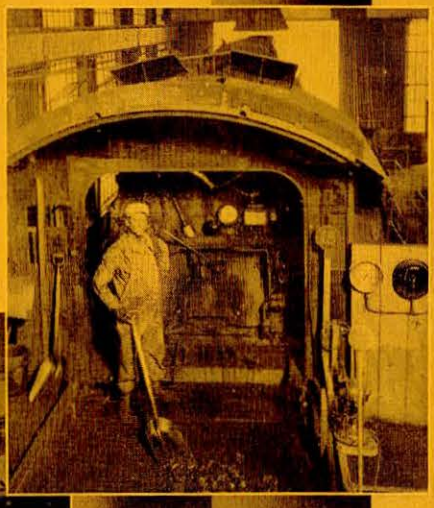
DEARBORN CHEMICAL COMPANY

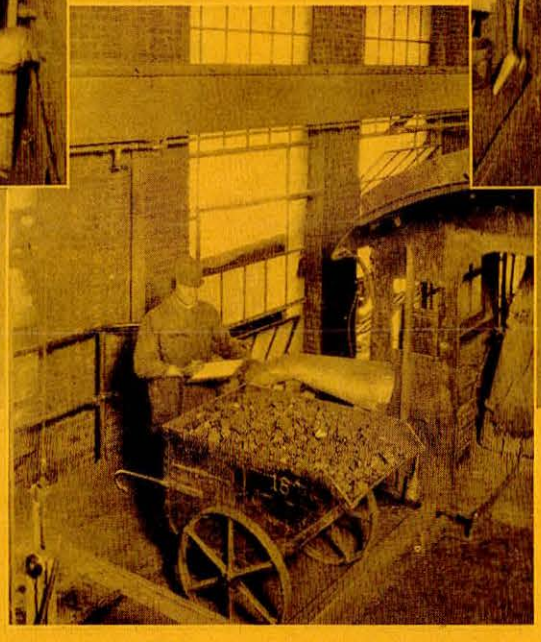
SYPHONS

Increase Boiler Efficiency

8.47%







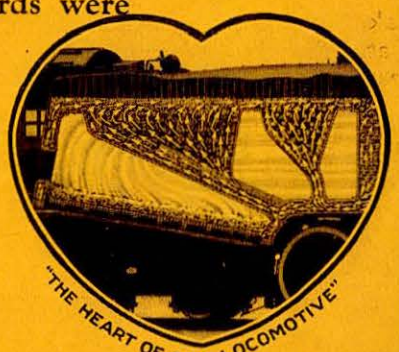
The water used was weighed and accurately recorded

The tests were fired by Mr. Kelly Taylor, 18 years with the Illinois Central Railroad, and selected by the railway company representatives

Weighing and recording coal. All coal used was Williamson County (Illinois) No. 6

- Throughout the tests at the University of Illinois in 1930, which established that Syphons increase boiler efficiency 8.47%, accurate records were kept of every relevant detail.

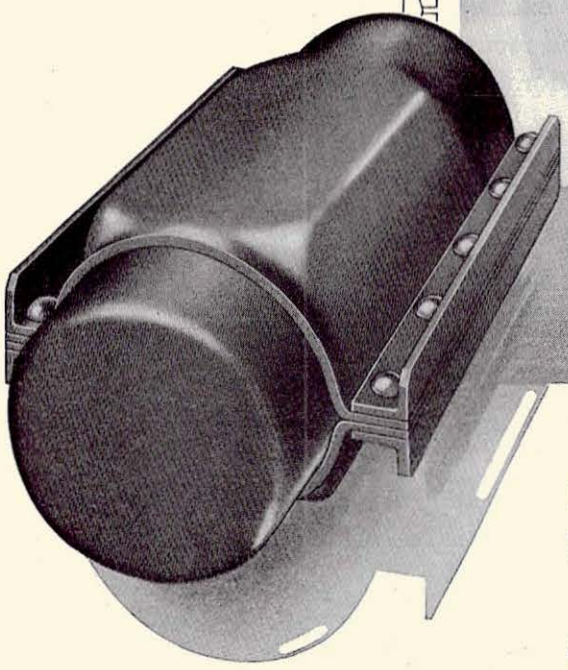
The University's Bulletin No. 220 states: "At all rates of evaporation the Syphon-equipped locomotive showed a definite and notable superiority over the non-Syphon engine as regards both evaporation per pound of coal and boiler efficiency."



LOCOMOTIVE FIREBOX COMPANY
NEW YORK CHICAGO MONTREAL

CIRCULATION
SAFETY
ECONOMY

ENDURANCE



Impartial official tests have shown the Edgewater Draft Gear to be pre-eminent in Endurance.

Gear capacity is essential to provide protection for cars and lading. Endurance is necessary to maintain capacity and to continue protection.

The thoroughly lubricated friction surfaces of the Edgewater Draft Gear provide unexampled smoothness of action and protection against wear and loss of capacity. The Edgewater Gear has greater capacity and more endurance than any other draft gear which fits into the standard A. R. A. pocket.

EDGEWATER STEEL COMPANY
PITTSBURGH

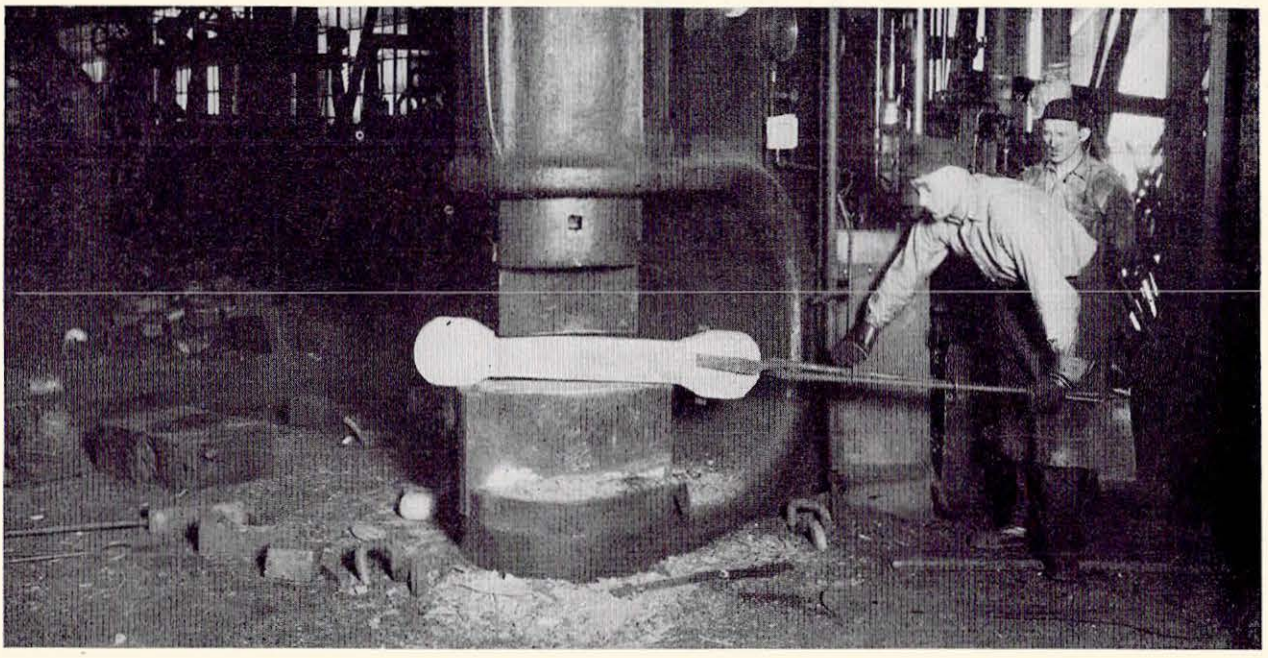
SALES OFFICES: ATLANTA BALTIMORE BOSTON CHICAGO
LOUISVILLE NEW YORK PHILADELPHIA KANSAS CITY SAN FRANCISCO
ST. LOUIS ST. PAUL SEATTLE WASHINGTON

from
VULCAN IRON FORGING BILLETS

IN forging locomotive and passenger car parts such as spring hangers, tender truck swing link bars, draw bars and equalizers, UNIFORMLY DEPENDABLE IRON is vitally important; not only in the process of forging, but even more so in their relation to maintaining lower cost operating efficiency and higher factor of safety.

The built up structure of VULCAN IRON gives it individuality for it possesses certain features that are exclusive and which over a period of many years have established records of sustained performance resulting in worth-while economies not to be had from just ordinary iron or steel.

A VULCAN IRON for every purpose.



VULCAN BLOOM STAYBOLT IRON
VULCAN XX ENGINE BOLT IRON

LOCKHART IRON & STEEL CO. PITTSBURGH, PA. VULCAN

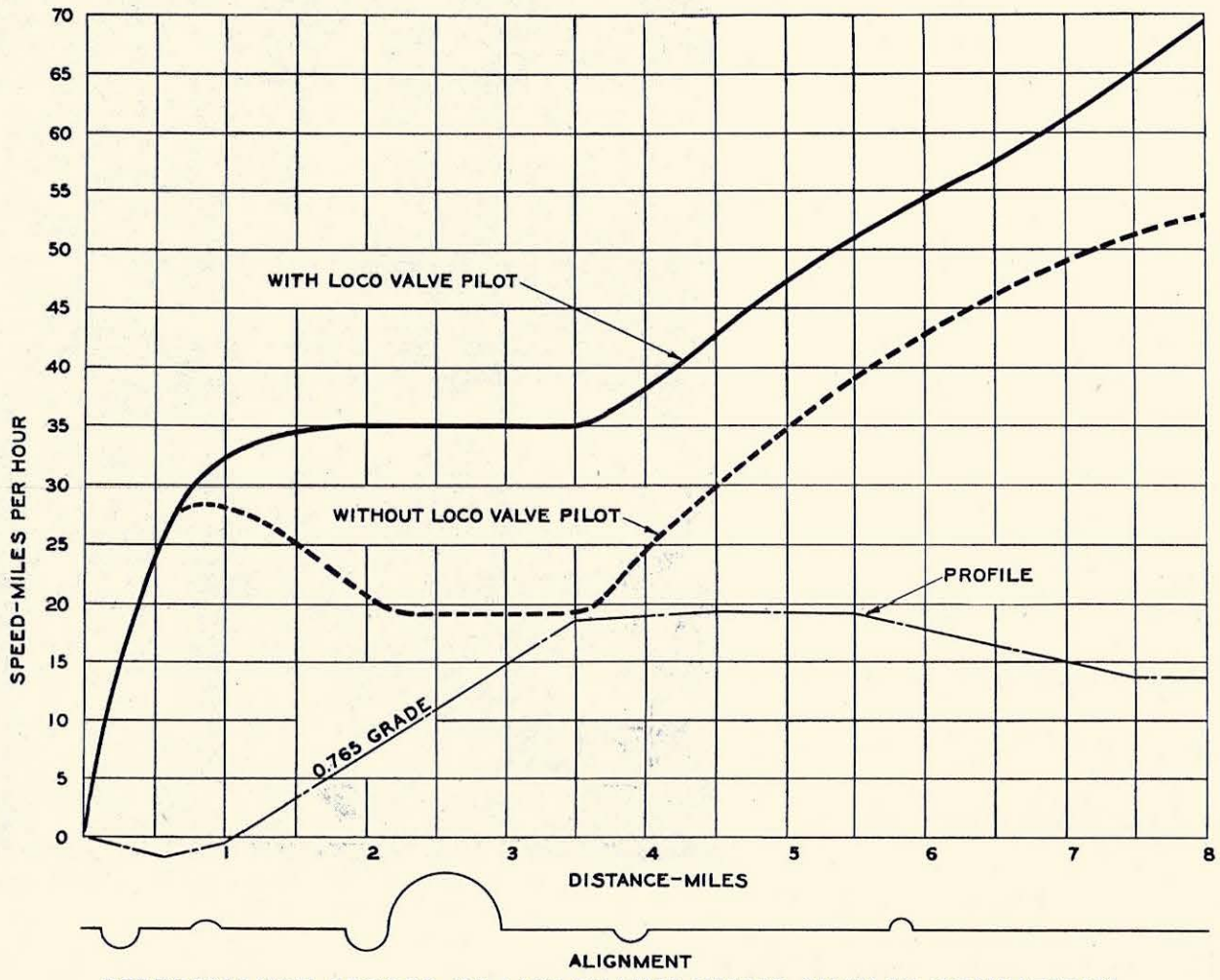
LOCKHART IRON & STEEL CO.

DIRECT MILL REPRESENTATIVES
BLATCHFORD CORPORATION
RAILWAY EXCHANGE,
CHICAGO, ILL.

Pittsburgh, Pa.

LOCO VALVE PILOT

REDUCES TIME ON GRADES



PERFORMANCE RECORD OF LIKE TRAINS UNDER SIMILAR CONDITIONS

THESE ACTUAL SPEED DISTANCE CURVES TELL THE STORY!

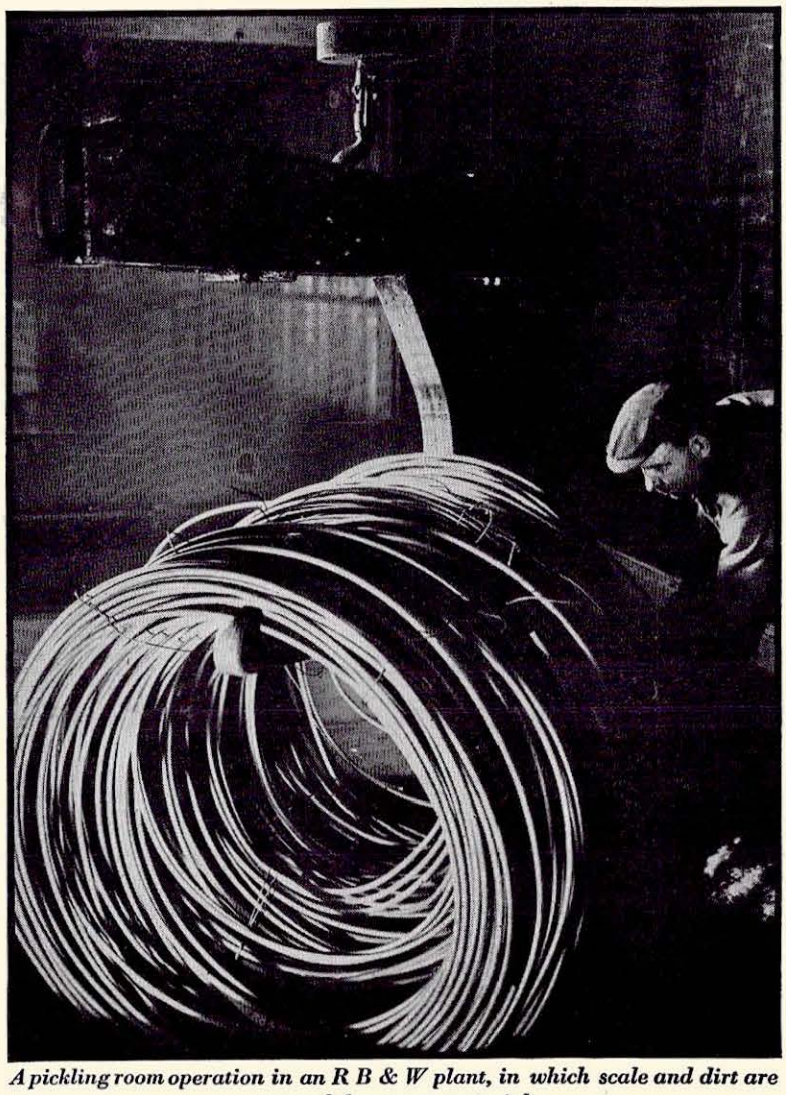
VALVE PILOT CORPORATION

230 Park Avenue, New York City

DOWN TO SEE SOME SHIP BOLTS

WENT A GROUP OF ENGINEERS

BOURKE-WHITE PHOTO



A pickling room operation in an R B & W plant, in which scale and dirt are removed from raw materials.

Galvanized bolting material has its own fit and finish requirements... an R B & W case history

A LARGE American republic had placed orders for construction of naval destroyers and scout cruisers. The ship building company which received the contracts ordered galvanized bolts from R B & W, to be made in accordance with the specifications furnished by the navy department of the government that had ordered the vessels.

But the specifications required a fit of bolt and nut which is not necessary in marine work, and which, in galvanized material, required reducing the thickness of the galvanized coating, with a consequent weakening of protective resistance to the ravages of the elements. The R B & W order department sent the order to our Engineering Service department for instructions. (Of course, it would have been a simple matter to overlook the faulty specifications and ship the order as requested.)

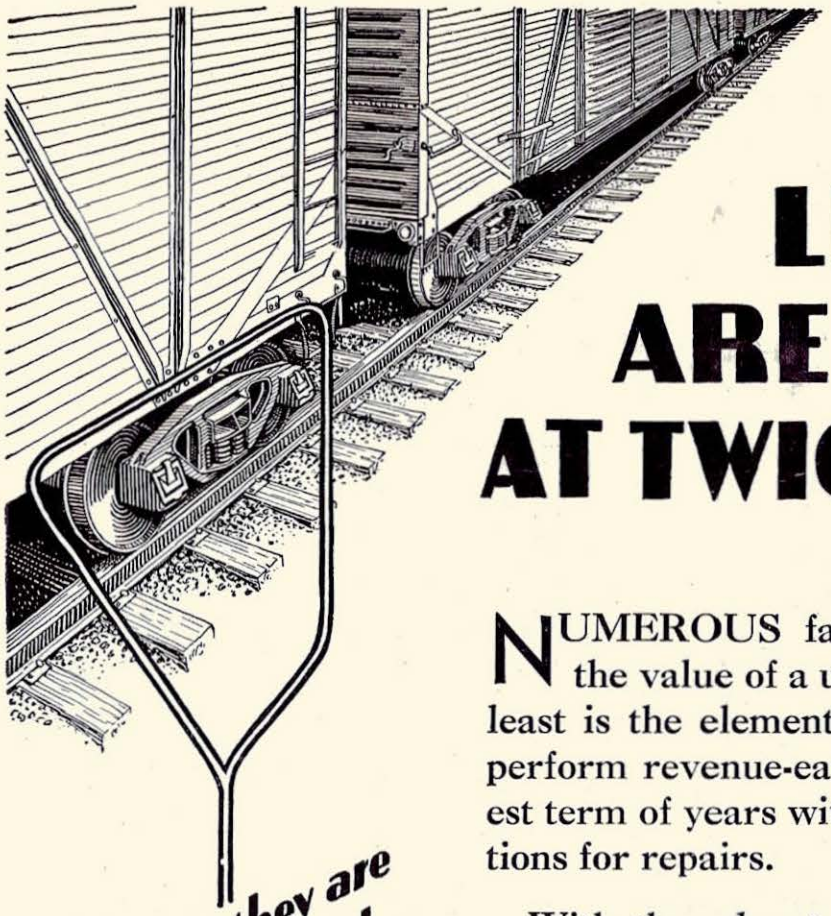
After considerable correspondence and other negotiation, the R B & W Engineering Service arranged to call on the navy's construction engineers and specification writers with a representative of the ship builders. A brief demonstration and explanation with specimen galvanized bolts resulted in a consent to revise the specifications and a ruling that bolt and nut fits as furnished by R B & W would be approved by the inspectors.

When you have a problem in the correct specification and use of bolting material, put it up to the R B & W Engineering Service.

RUSSELL, BURDSALL & WARD BOLT & NUT CO.

ROCK FALLS, ILL. PORT CHESTER, N. Y. CORAOPOLIS, PA.

Sales Offices at Phila., Detroit, Chicago, San Francisco, Los Angeles, Seattle, Portland, Ore.

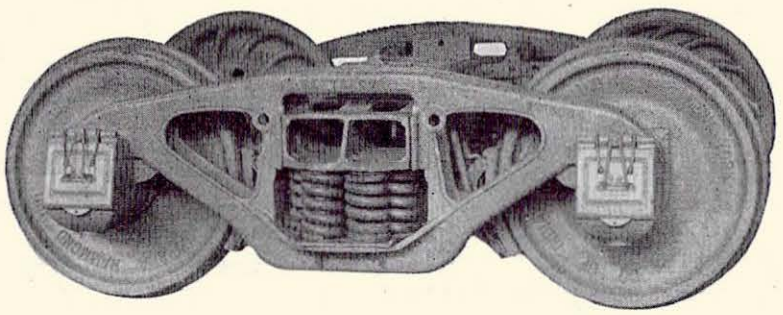


CARS LIKE THESE ARE YOUNGER AT TWICE THE AGE

NUMEROUS factors combine to establish the value of a unit of rolling stock. Not the least is the element of long life—the ability to perform revenue-earning service over the longest term of years with the minimum of interruptions for repairs.

With the advent of the Bettendorf Dalman-Type Truck the normal earning life of rolling stock has appreciably lengthened. No more destructive, joint-loosening, material-fatiguing road shocks through the medium of solid or broken springs. Instead, the Bettendorf Dalman-Type has ushered in an era of easy riding, spring cushioned freight haulage. The best of the modern freight cars are so equipped.

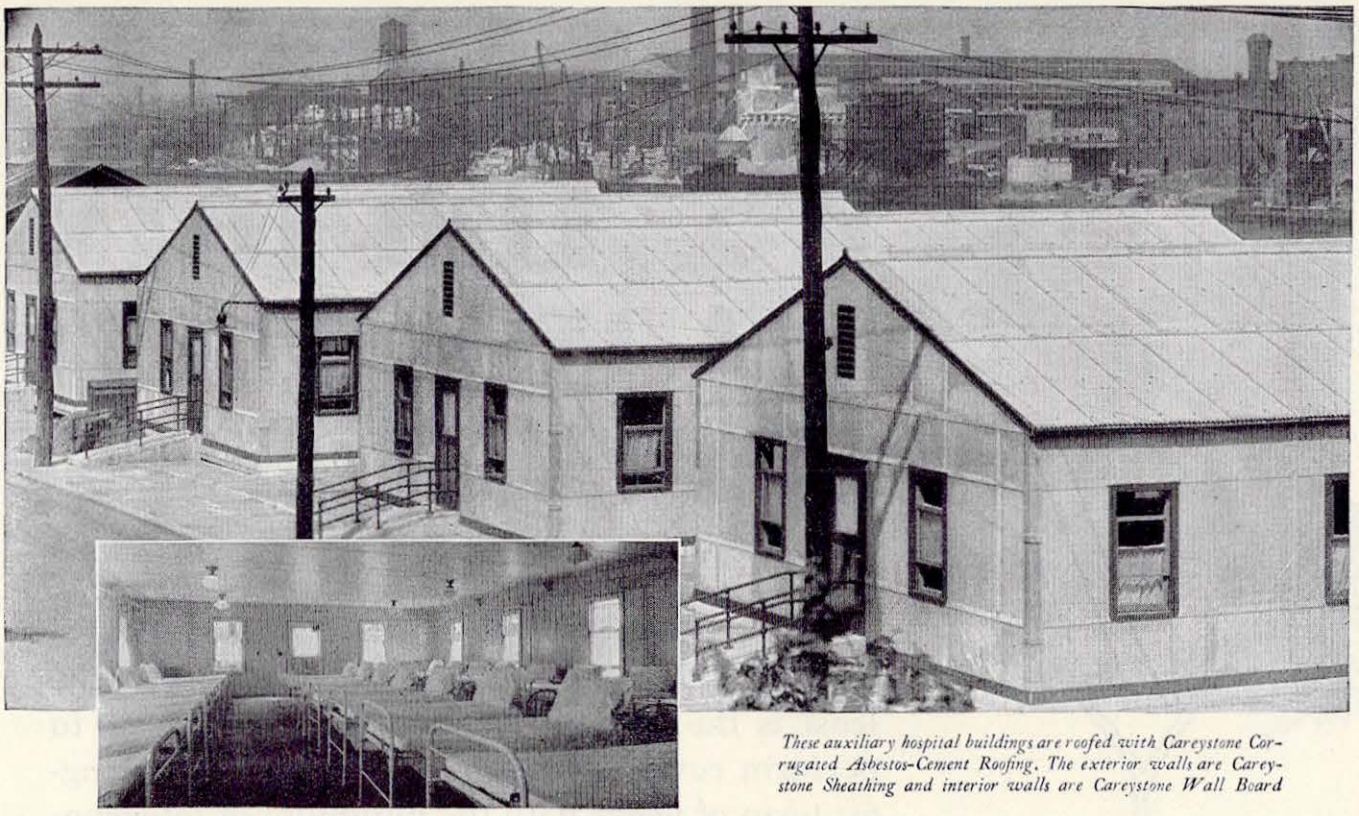
Because they are equipped with BETTENDORF Dalman-Type Trucks



The Dalman feature adds two standard coils to each spring group.

THE BETTENDORF COMPANY

OFFICES AND WORKS BETTENDORF, IOWA



These auxiliary hospital buildings are roofed with Careystone Corrugated Asbestos-Cement Roofing. The exterior walls are Careystone Sheathing and interior walls are Careystone Wall Board

Careystone Roofing and Siding for Low-cost, Permanent Buildings

WHEN fire-proof roofs and walls are needed and costs must be held down, Careystone Roofing and Siding furnishes the answer. Made of asbestos and Portland cement, these sturdy sheets contain nothing to burn or corrode and are as lasting as stone. Careystone is formed under great hydraulic pressure into both corrugated and flat sheets of various thicknesses. These sheets are factory cut to size and hence can be applied on the structural steel at minimum labor cost and in the shortest possible time. Careystone requires no paint or other renewal treatment, and its use therefore eliminates the continuous upkeep expense which is incurred when less permanent construction is used. The natural gray color reflects the sun's heat, making buildings cooler in summer. Because of these obvious advantages, the use of Careystone for railroad construction purposes is rapidly increasing. Our engineering department will supply full information, including cost estimates for roofing or siding any proposed building.

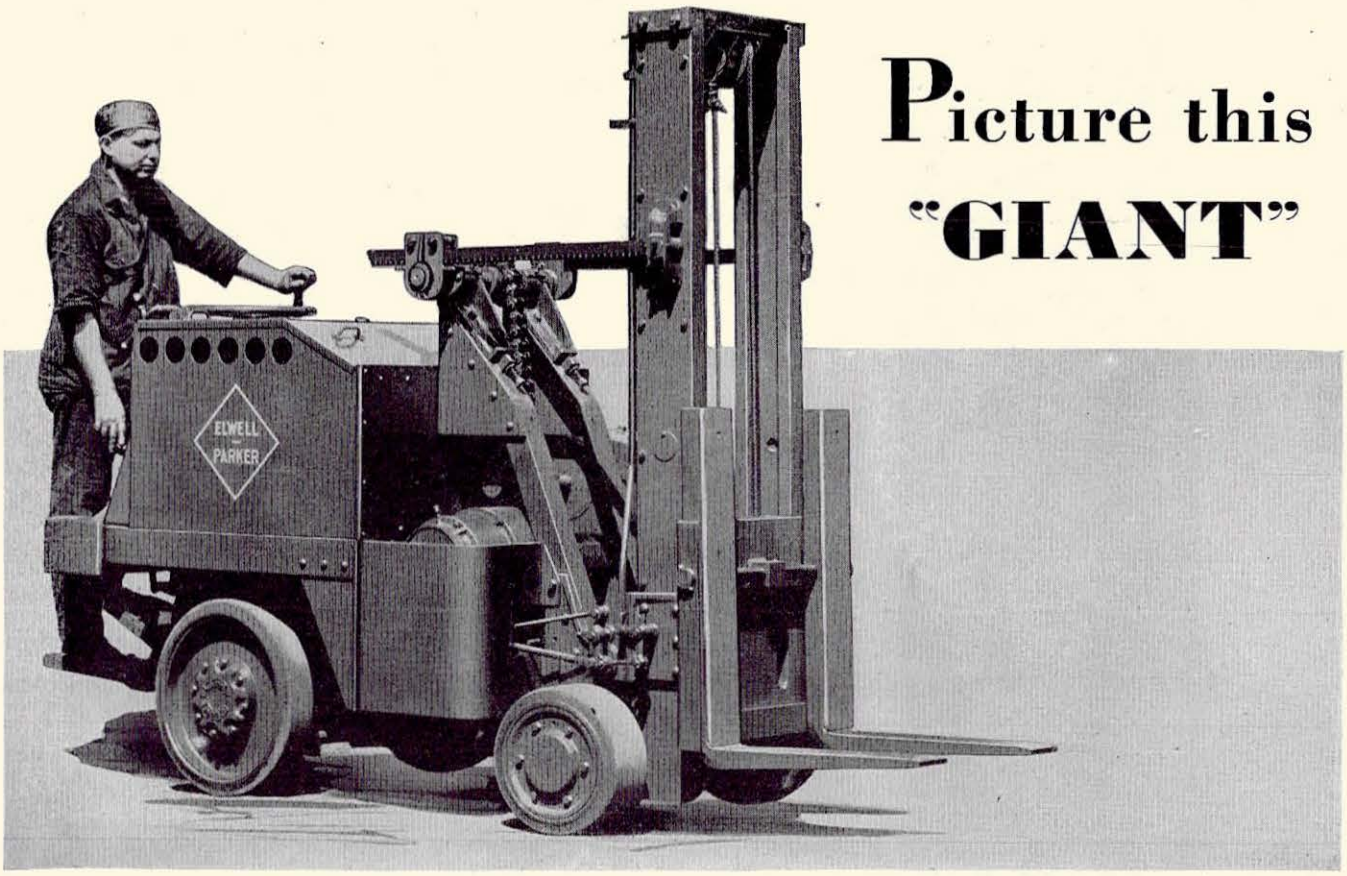
THE PHILIP CAREY COMPANY × Lockland, Cincinnati, Ohio
Branches in Principal Cities

BUILT-UP ROOFS
ASPHALT PRODUCTS
ELASTITE EXPANSION JOINT
WATERPROOFINGS
ROOF PAINTS

Carey PRODUCTS EST. 1873

HEAT INSULATIONS
ASBESTOS MATERIALS
CAREYSTONE CORRUGATED SIDING
ASFALTSLATE SHINGLES
BUILDING PAPERS

599 RA



Picture this "GIANT"

at work on YOUR jobs!

THE Elwell-Parker Type ERN Truck. It is *powerful*—far beyond the exacting demands of the day's job.

It is in *perfect balance*, but has no surplus weight.

It is *quick and responsive*, in motion.

And, true to character, it shoulders up the load in one mighty swing, heads off on the trip and comes rolling back for more—all in those smooth, easy moves that come only from surplus power under perfect control. A new design in the steering mechanism makes steering surprisingly easy.

Type ERN is Elwell-Parker's heaviest duty, tilting, fork type truck. A thorough examination of these illustrations will impress you with the *thoroughness*, the *soundness*, and the *ruggedness* of its design.

Heavy duty tires, larger bearings, more powerful motors—every part is built to meet the demands of unusual service in handling loads beyond the wheelbase with or without skids. All Elwell-Parker safety features have been incorporated.

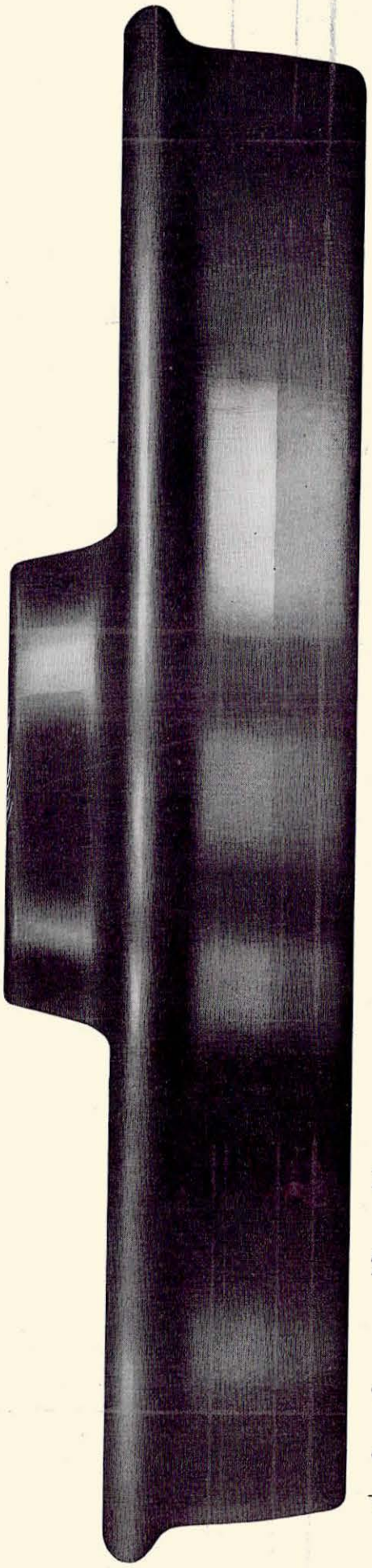
To fit the exact needs of railroad demands, we also build this machine with telescoping uprights, and can furnish it with crane or with various load-handling accessories, giving it a practically universal application.

Elwell-Parker Engineers, constantly studying new trends in mechanical transportation, are soundly anticipating railroad requirements years hence. Your Elwell-Parker Truck, therefore, is not merely an efficient, earning tool for *today*, but for the long reach ahead when fractional savings will be of more and more importance.

Ask us for full particulars. The Elwell-Parker Electric Company, 4250 St. Clair Ave., Cleveland, Ohio.

ELWELL-PARKER

DESIGNERS AND BUILDERS OF ELECTRIC INDUSTRIAL TRUCKS, TRACTORS AND CRANES FOR OVER A QUARTER CENTURY



They're STRONG! They're SAFE! They LAST!

Modern fast-freight service makes severe demands on wheels. It requires wheels that are safe, that eliminate costly delays due to slid-flats, shelled-treads, and broken flanges, that have strength and endurance, and that give many thousands of miles of trouble-free service. Bethlehem Light Weight Wrought Steel Wheels meet all these requirements.

Bethlehem Wheels are produced for all freight cars. To cover the field thoroughly, this Company manufactures, in addition to the Bethlehem Light Weight Wheel for cars with a maximum carrying capacity of 57½ tons, light-weight wheels for cars with carrying capacities of up to 70 and 75 tons. All these wheels are made by the same process as multiple-wear Bethlehem Wheels, but have smaller hubs, and lighter plates and rims than the corresponding wheels of the multiple-wear type.

Bethlehem Light Weight Wheels for cars of maximum carrying capacities of up to and including 75 tons are amply justifying their adoption—by their strength and endurance, by the many thousands of miles of trouble-free service that they give, and above all, by their safety.

BETHLEHEM STEEL COMPANY

General Offices: Bethlehem, Pa.

District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis

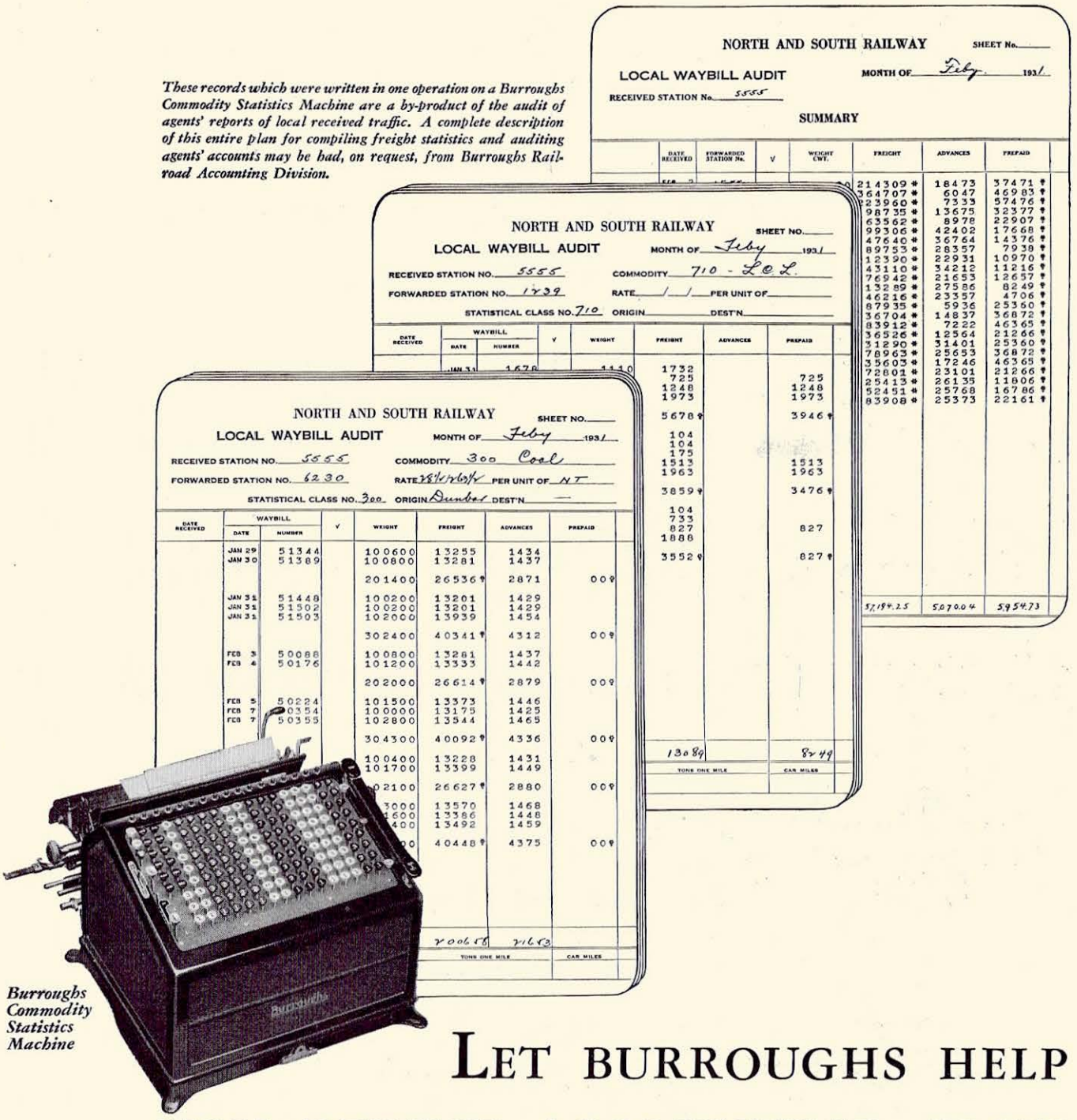
Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Portland, Seattle, Honolulu

Export Distributor: Bethlehem Steel Export Corporation, 25 Broadway, New York City

BETHLEHEM STEEL

BETHLEHEM Wrought Steel Wheels

These records which were written in one operation on a Burroughs Commodity Statistics Machine are a by-product of the audit of agents' reports of local received traffic. A complete description of this entire plan for compiling freight statistics and auditing agents' accounts may be had, on request, from Burroughs Railroad Accounting Division.



Burroughs Commodity Statistics Machine

LET BURROUGHS HELP YOU REDUCE ACCOUNTING COSTS

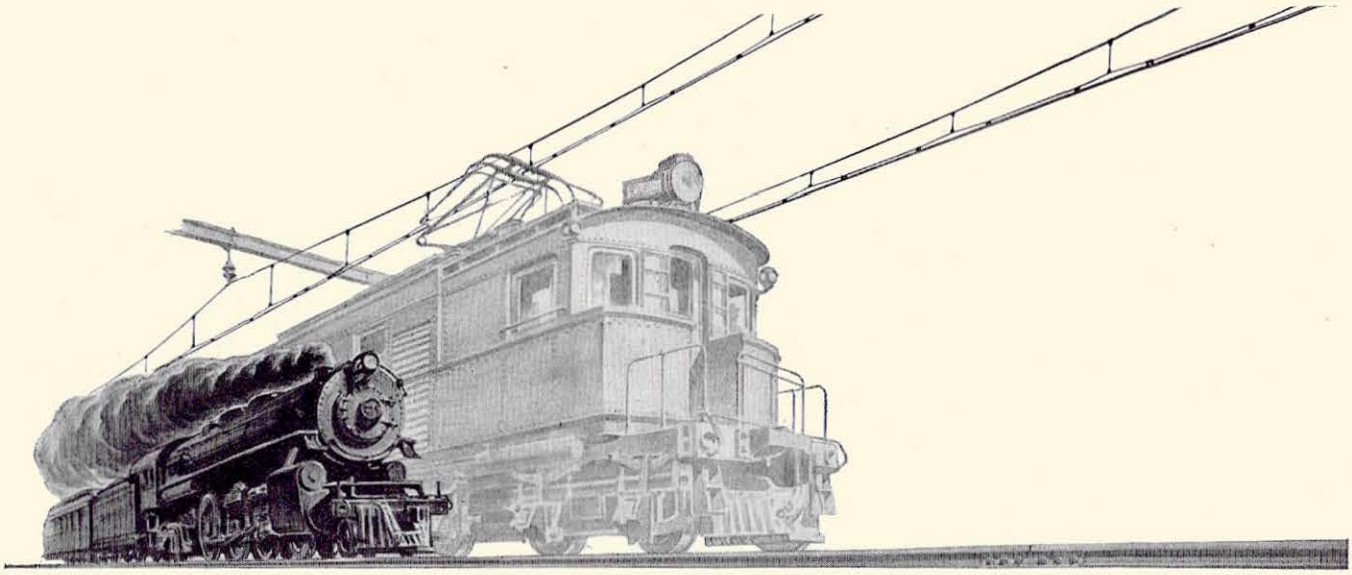
Due to the recent developments in Burroughs machines, many roads have effected substantial savings in time, labor and money through the installation of such accounting equipment as Burroughs Commodity Statistics Machine.

There are many other new Burroughs machines especially designed for railroad accounting work . . . many other jobs that they handle with surprising ease, economy and accuracy.

To learn more about these new machines—these new developments—telephone the nearest Burroughs office or write direct to the Burroughs Railroad Accounting Division in Detroit.

BURROUGHS ADDING MACHINE COMPANY · (*Railroad Accounting Division*) · DETROIT, MICHIGAN

Burroughs



Name the Wire and Cables that you use . . . *we make them*

ANACONDA
from mine to consumer
REG U.S. PAT OFF

Recognized by the industry for supplying messenger cables to most of America's electrification projects, Anaconda *also* manufactures other wires and cables that you use almost daily.

81 Signal Wire . . . Control Cable . . . Telephone and Telegraph Cables . . . Trolley Wire . . . Rail Bonds . . . Power Cable . . . Rubber-Covered Wire . . . Weather-Proof Wire . . . Magnet Wire . . . Parkway Cable . . . Heavy-Duty Portable Cords . . . Annunciator and Office Wire . . . Duratube . . . Flexible Conduit . . . and enough others to total 81 in all. That many wires and cables for *every* electrical requirement. Look for the Anaconda spear-head, mark of dependable quality.

ANACONDA WIRE & CABLE COMPANY

GENERAL OFFICES: 25 BROADWAY, NEW YORK
CHICAGO OFFICE: 20 NORTH WACKER DRIVE
Sales Offices in Principal Cities

Is advertising the key to the future of the railroads?

SOME of the big men in railroading are still prone to look with indifference upon advertising.

They think of advertising expenditures as "hush money"—remembering the days when it was customary to dehorn rip-snorting editors with a little judiciously purchased advertising space.

Today conditions have changed. Muckraking has gone by the boards. And advertising is being used to real purpose by railroad executives of vision and understanding.

The Canadian Pacific, with no direct line into Chicago, reported a substantial increase over the preceding year in the net revenue of its Chicago office after running three full page advertisements in the Chicago Tribune.

What an opportunity for other railroads!

The territory the Chicago Tribune serves has a population of 12,200,000 and produces more than 5½ billions of dollars of retail spending a year.

To any railroad executive determined to develop a constructive business building program the Chicago Tribune offers a plan of action that is worth serious consideration.

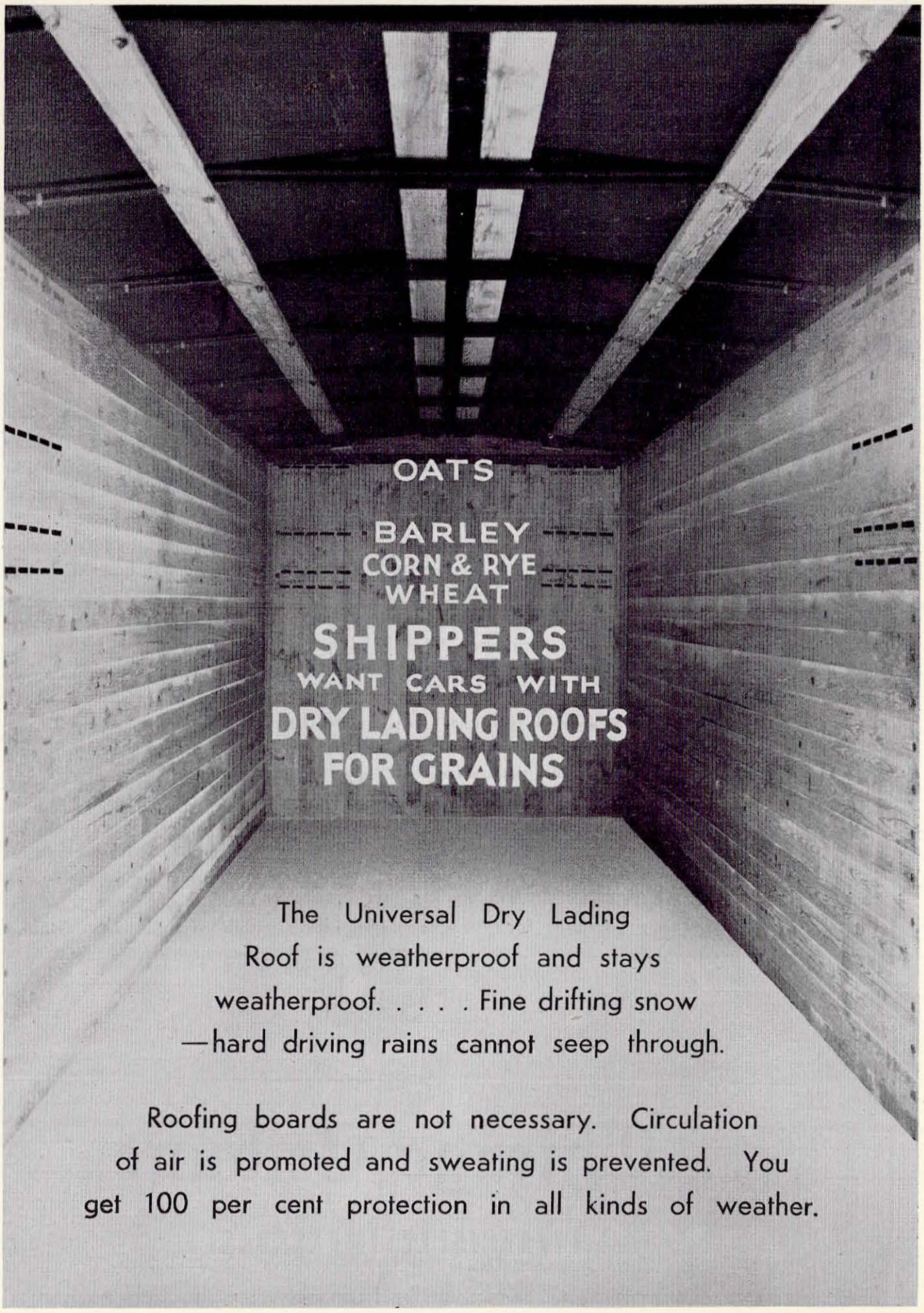
This plan is not conversation but a collection of tangible figures and facts that show the business there is in the Chicago territory for the railroad head willing to go after it.

Give your railroad full benefit of this modern business force. Look into the possibilities of advertising in the light of what it is known to do for railroads that really want more business. Call in a Chicago Tribune man and get the facts.

Chicago Tribune

THE WORLD'S GREATEST NEWSPAPER

FINANCIALLY IMPREGNABLE


OATS
BARLEY
CORN & RYE
WHEAT
SHIPPERS
WANT CARS WITH
DRY LADING ROOFS
FOR GRAINS
The Universal Dry Lading Roof is weatherproof and stays weatherproof. . . . . Fine drifting snow —hard driving rains cannot seep through.
Roofing boards are not necessary. Circulation of air is promoted and sweating is prevented. You get 100 per cent protection in all kinds of weather.

Hutchins Car Roofing Company

RAILWAY AGE

The Railway Wage Question

The national railway labor organizations will decide at a meeting in Chicago on December 7 and 8 whether they will accept a general reduction of ten per cent in the wages of their members for one year. Their decision will be of great importance to railway employees, the railways and the public. On the basis of the payroll of 1930 such a reduction would save the railways about $260,000,000, and on the basis of the payroll of 1931, about $215,000,000. The reduction in the average income of railway employees would be smaller than the reductions that already are being borne by most classes of the people. On the other hand, it might prove to be the only means available of saving a large part of the railroads from bankruptcy.

How bad is the present situation of the railways seems to be realized by very few persons. On October 28 their common stocks sold on the New York stock exchange at the lowest prices in history. The Dow-Jones averages of prices of railroad and industrial stocks are equated to allow for stock dividends, "split ups", etc., and therefore are strictly comparable for different years.

The lowest average price of railroad stocks shown by the Dow-Jones figures for any time before the present depression was reached in April, 1897, when it was $48.12. A new "low" of $45.68 was made on October 5, 1931. The average had increased on October 20 to $58.18; but on that date the Interstate Commerce Commission rendered its decision in the rate advance case, and it has been declining ever since, and on November 28 was only $38.96, or 40 per cent lower than at any time in the depression of 1921, and 20 per cent lower than in any depression previous to the present one. On the other hand, on November 28 the prices of industrial stocks were still 40 per cent higher than at the lowest level reached by them in 1921. The prices of railroad stocks have declined relatively so much more than those of industrial stocks because the net earnings of the railways have become relatively so much worse than those of industrial corporations. The railways in the year 1931 will earn the smallest net operating income, excepting when they had the war-time guarantees, in thirty years. As long ago as in 1902 they earned $560,000,000, while in 1931 they will earn only about $540,000,000, although the investment in their properties is two and one-half times as great as it was in 1902.

Reduction of Wages a "Dole" to Capital?

The suggestion that railway labor accept immediately a reduction of ten per cent in its wages for one year was made to the heads of the railway labor unions at a recent meeting in New York by a committee of railway presidents. While this suggestion will be transmitted to the labor organizations at their meeting in Chicago next week, the heads of the organizations apparently will not recommend its adoption, and said in a letter to the committee of railway presidents, "We submit that impartial public opinion will support our attitude that labor cannot be called upon to pay a 'dole' to idle capital". Those who invest their capital in a railroad do so for the purpose of getting a return upon it, just as those who enter its employ do so for the purpose of getting a wage, and in the long run capital as well as labor will refuse to work unless it gets paid. The capital invested in railroads is not asking for a "dole" from labor, but that labor shall share with it the losses being caused by the present depression in order that the industry upon which they both depend for their incomes shall not be ruined.

In 1929 the railways paid $2,941,000,000 in wages, and in 1931 will pay about $2,145,000,000, a reduction of 27 per cent. This reduction in payroll is due almost entirely to a reduction in the number of employees, because there have been no reductions in the rates of pay of the organized employees, which are still the highest per hour in history, excepting, perhaps, in 1920.

The net operating income earned by the railways in 1929 was $1,275,000,000, and in 1931, as already stated, will be only about $540,000,000, a reduction of 58 per cent, or relatively twice as great as the reduction in the pay roll. While the net operating income earned by the railways this year will actually be smaller than in 1902, the total wages paid by them

will be 220 per cent greater than in 1902, and the average wage per employee 200 per cent greater than then. The reduction in the income of railway capital due to the present depression has been relatively so much greater than the reduction in the income of railway labor that it is foolish to talk of capital seeking a "dole" from labor when a reduction of wages is suggested.

When attention is called to the fact that wages have been reduced in other industries, the labor leaders reply that the prices received by other industries have declined during the depression, while the rates of the railways have not been reduced. The railways are, however, in much worse financial condition than other industries, and when they recently sought an advance in freight rates the labor leaders supported it, thus virtually conceding that rates were too low; but no adequate advance in rates was granted. Theories as to what wages ought to be are valueless when they disregard facts. The cold fact is that from their present earnings the railways cannot afford to pay present wages, and all the sophistry to which labor leaders may resort will not alter that fact in the least.

While the labor leaders sent a letter to the committee of railway presidents indicating that they would not recommend a voluntary reduction of wages for a year, it is certain that they were not unanimous in considering this action undesirable, and it is by no means certain that their organizations will not decide that, from the standpoint of railway employees, it is desirable.

The Interest of Railway Labor

If employees agree to a ten per cent reduction it will be in effect only for a year, unless, at the end of that time, it is agreed to keep it in effect for a longer period. If a voluntary reduction is not made, the railways will be forced to seek a larger reduction than 10 per cent under the Railway Labor act, and if they get it it will remain in effect until the employees can get an increase under the same act.

Almost 500,000 railway employees have been thrown out of work during the last two years. An immediate reduction of wages would enable many railways to quit reducing employment and might result in an increase of it. On July 1, 1921, when a reduction of 12 per cent was made, the number of employees averaged 110,000 more during the three months following the reduction than during the three months preceding it. With so large a number of the railways now heading straight for bankruptcy, the maintenance of present wage scales until they can be reduced under the Railway Labor act will inevitably result in the railways continuing to reduce their forces more and more, and therefore in an increase of unemployment.

While the public does not realize how bad the present railway situation is, it does know that the railroad industry is in a very precarious condition. Almost all classes of persons have had their own incomes reduced; and consequently there is an overwhelming public sentiment in favor of a reduction of railway wages. However long it may take, the railways are sure finally to get a general reduction of wages under the Railway Labor act if the employees refuse to make it voluntarily, and if the employees, by refusing it, throw a large part of the railroads into bankruptcy, they will create a public sentiment which will be hostile to them and to all their demands for changes in wages and working conditions for years to come.

The bankruptcy of a large number of railroads would, in the long run, do great harm to railway employees. Capital is just as essential to the conduct of the industry as employees. Numerous bankruptcies would largely destroy the credit of the industry. Without credit, it would be extremely difficult for it to raise new capital in future. The less capital it could raise the less employment it could give, and the lower would be the wages that it would be able to pay.

Refusal by employees of an early reduction of wages would reduce the number of men the railroads could employ and the purchases they could make, would imperil the entire financial and economic structure of the country with the threat of numerous railroad bankruptcies, and would thereby prolong the present depression, as well as help to destroy the credit of the railroad industry and cripple the railroads in meeting the competition of other means of transportation and giving employment in future. It is not the fault of railway managers that wages must be reduced. They sought to avoid it by seeking an advance in freight rates, but the decision of the Interstate Commerce Commission in the freight rate case made a reduction of wages inevitable. Sooner or later it must be made, and railway employees will act contrary to their own interest as well as that of every other person in the United States if they postpone what finally they cannot possibly avoid.

Power Without Responsibility

The failure of the Interstate Commerce Commission ever since the passage of the Transportation Act to take seriously the injunction in that act to it to provide rates which would yield a fair return, and its lighthearted persistence in that attitude in the recent decision in the rate advance case, afford a glaring instance of "power without responsibility". Power the commission has, and wields; but as power grows its sense of responsibility increases not at all, or even wanes.

Since the commission refuses to accept responsibility, except to a grudging and insufficient degree, for the financial welfare of the railways, it follows that if this welfare is to have any defense at all, then the job is clearly up to railway managements and to them alone. But railway managements cannot advance this interest if the commission is to continue indefinitely to encroach upon their few remaining prerogatives, as it constantly endeavors to do.

The order requiring depreciation accounting is one of the most startling of the commission's recent efforts to extend its power. One reason, the commission explains, for its preference for depreciation over retirement accounting is the wide fluctuation of retirement charges from year to year. The railways, says the Commission, "wish opportunity when business is poor to postpone or defer retirements until it is good"—a natural wish, one might assume, but one which the commission does not approve. It, on the contrary, proposes to stabilize depreciation and retirement charges to operating expenses in good and bad years, but it does not say where the money is to come from in the bad years to keep the railroads from showing operating deficits, thus completely destroying their credit. But railroad credit is the least of the Commission's concerns.

It is simply an instance of an ever-growing desire to meddle, leaving someone else to suffer the consequences—a reckless driver of a borrowed car the owner of which has to pay for the damage done. Fortunately the legality of the order in this case seems to be, at most, doubtful. Managements have then in an appeal to the courts an effective weapon to wield against this further dangerous encroachment on their powers. They should use it promptly and with all the force at their command.

Dividing Cost of Highway Crossing Signals

The protection of highway-railway grade crossings is one of the most important problems involving the general public and the railways today. The carriers operate practically the same mileage of lines as 20 years ago, and although the trains are longer, they are by no means as numerous. The grade crossing problem has, therefore, been brought about by the phenomenal increase in the use of automobiles by the general public. For this reason, it is time that some one besides the railroads should contribute in a financial way toward the installation of the protection required at these crossings.

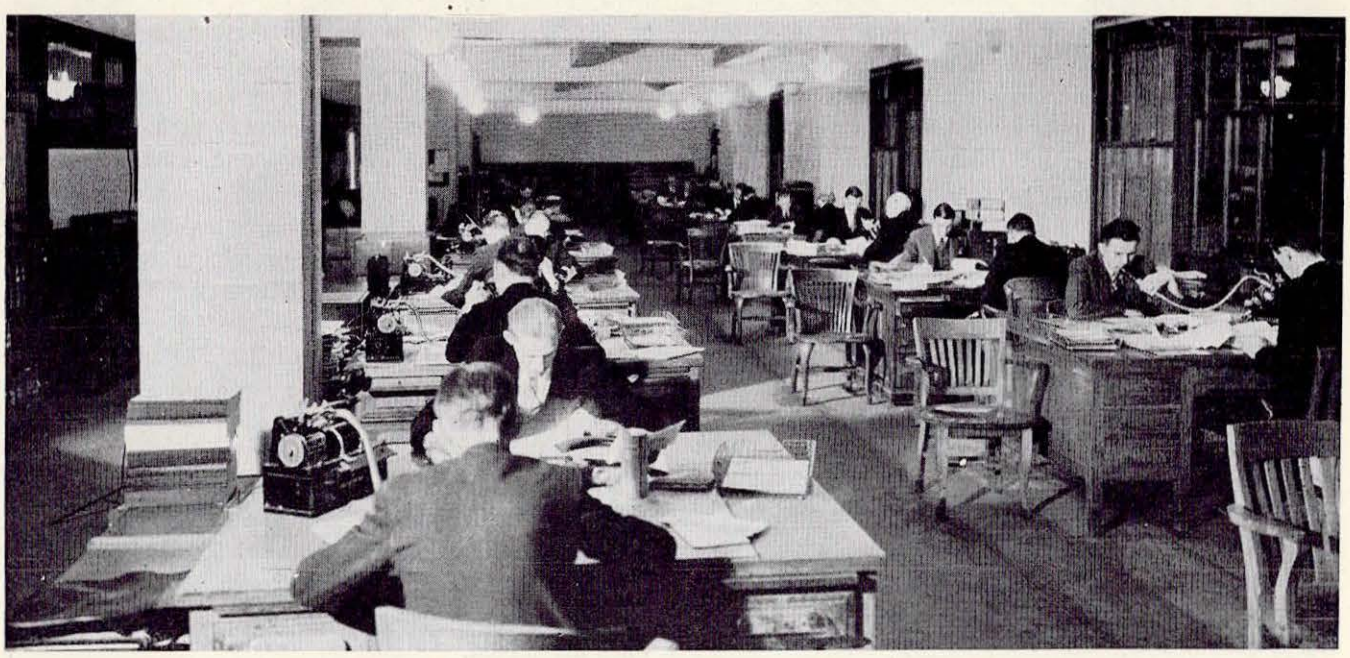
The railroads have spent millions of dollars installing crossing gates and signals; the charges for the maintenance of such equipment and for the employment of gatemen and crossing watchmen is an important item in their annual operating costs, averaging as high as $3,000 per mile of road on certain lines of some carriers. Not only is this expense being carried entirely by the roads, but they are also installing protection at many additional crossings each year, 1,495 such installations having been made during the year 1930.

The railroads are to be commended for their extensive activity in providing protection for highway traffic at crossings, but their efforts are not adequate to meet the requirements. This is shown by the fact that only 30,287 of the total of 240,300 crossings are as yet protected by other than fixed signs. The frequent occurrence of accidents at crossings protected by fixed signs only demonstrates that signals or gates should be installed at many of the crossings not now so protected. While the railroads are certainly doing their share by protecting some 1,500 crossings annually, at this rate many years will elapse before all the important crossings are protected, even if no new ones are added.

It may be seen, therefore, that, although the highway-crossing problem has arisen primarily by reason of the increased use of the highways, the railroads have been and still are making heroic efforts, lone handed, to meet the situation. However, it is unjust to expect them to expand their program to meet the need unaided, especially as during the past five years new crossings have been opened at the rate of more than 1,500 annually, whereas comparatively few are eliminated by the separation of grades, the total for 1930 being only 403.

That the suggestion that the public share the cost is not without precedent is evidenced by the fact that the federal government and most of the states are already sharing the expense of constructing underpasses and viaducts for the separation of grades—the ultimate in crossing protection. Furthermore the "ice" has actually been broken on the problem at hand, for the state of Indiana has recently enacted a law providing that the cost of installing highway crossing signals and of altering or relocating them shall be borne equally by the railroad and the state. Michigan has passed a similar law which provides that the state shall not only share the cost of installation but shall also contribute $10 per month toward the maintenance of the signals at each crossing so protected. Furthermore, the Highway Department of the state of Pennsylvania has agreed to share with the railroads the expense of installing crossing signals.

With such a start, every effort should be made by the railroads and by the various railroad associations to set before the public and the members of the various federal and state governmental bodies the necessity for co-operation in financing the installation of highway crossing protection, the demand for which is increasing so rapidly.

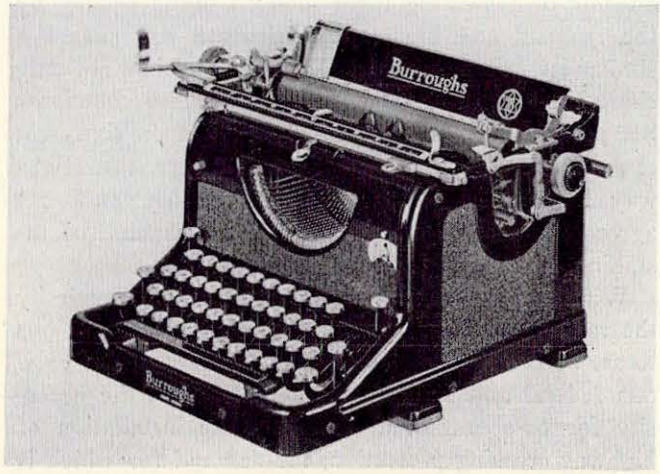


Dictating Machines Eliminate Delays in Dictation, Save Labor, and Speed Up Correspondence

Reducing Expenses in the Office

Scientific study of work to be done and installation of appropriate modern equipment effects large savings, improves performance

A SHORT time ago in the "Odds and Ends" column of the *Railway Age* there appeared an interesting letter from a railroad officer telling of a recent "clean-up" campaign on his railroad which netted 750 old copy presses which not so many years ago were a characteristic piece of equipment of almost every railroad office and freight station. "Discarding the presses," he said, "made it possible to effect a substantial saving in copying ink, pencils and ribbons, tissue impression books, copying rags, clothes wringers, etc., and also released valuable space for other uses."



Greater Use of Typewriters in Place of Handscript in All Classes of Work Saves Clerical Time and Minimizes Costly Errors

The retention of these presses until such a recent date does not, of course, mean that they have been in general use in recent years. It does, however, show how old equipment tends to be retained even after it ceases to be of service—possibly remaining in disuse alongside the most modern products of the office equipment industry. It suggests, moreover, the wide opportunities which exist on the railroads for profitable modernization of office equipment and practices.

The universal office machine—the typewriter—is of course to be found in every railroad office. But is it used everywhere where it would pay for itself in savings? The persistence of long hand records in a day when legible handwriting seems to be nearing extinction is a major difficulty which quick and accurate office performance always has to face. Many railroads have found that a greater use of typewriters and kindred machines have, by making primary records more legible, reduced materially their accounting expenses and avoided many errors and much correspondence. The growing use of typewriters by the general public has been reflected in a greater use of them by employees

whose work is such that the railways cannot reasonably require a knowledge and a use of such machines for handling correspondence, reports, etc. One company has stimulated this development by offering used typewriters to its employees at low prices, with the knowledge that the more use made of these machines the greater the legibility, accuracy and economy of railway "paper work."

Proceeding from the typewriter proper, the next step is to the efficient use of such machines and the orderly handling of correspondence in general. It appears evident that large economies are possible by the use of dictating machines, with transcribing done from voice records made on wax cylinders rather than from stenographic notes. The adoption of this method to replace personal stenography, however, is not enough if the greatest economy is to be achieved—the needs of the particular job must be studied and the installation must be made on a scientific basis to assure full economy from it.

One railroad, which had used dictating machines to a considerable extent, found that by consolidating its typing forces on a systematic basis for an entire department—the accounting department in this case—large savings were made. In this department at the outset were 54 typists (not including secretaries to some officers), a supervisor and two boys. In transferring forces to the consolidated department, clerical work was separated from typing so that no clerical work was performed in the central typing bureau. Within a period of two years a payroll saving of $22,200 was effected—and this without discharging any employees but simply by abolishing positions vacated. The force now has been further decreased to 29 operators with an annual payroll saving of $34,000. Moreover, the bureau has never found it necessary to work overtime or employ an extra force, which frequently was required before the work was consolidated. Furthermore many officers have found a dictating machine on the desk a great convenience for recording ideas while they are fresh in their minds and for handling their dictation. When the bureau started functioning there was an accumulation of two days of cylinder work on hand. At present only about 10 per cent of a day's cylinder receipts are carried over to the next day.

The advantages of a consolidated typing and transcribing force under direct supervision are cited by this railroad as follows:

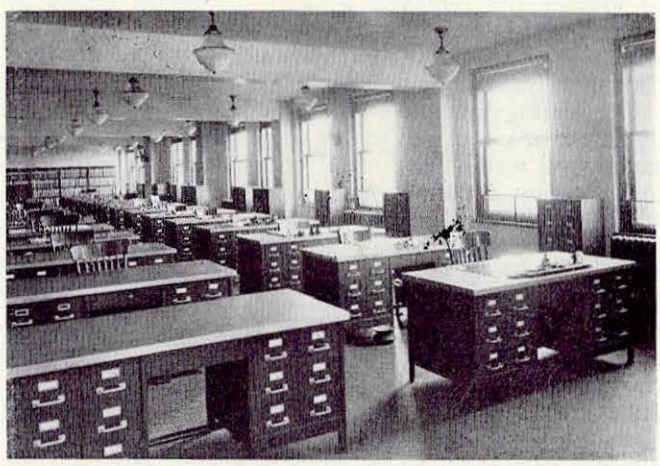
1. Promoting uniformity of work and even distribution among operators, preventing an accumulation of work during the absence of operators and avoiding the necessity for overtime.
2. Classifying the work and developing operators, permitting them to specialize on the kinds of work for which they are best adapted.
3. Arrangement of schedules to handle all routine work to conform with the requirements of individual departments.
4. Relieving individual departments of the responsibility of employing and training operators and of purchasing and caring for equipment, stationery and supplies.

Stimulated by the success of this central bureau serving all accounting department offices, the same railroad later established a similar transcribing and typing bureau to serve all operating department offices. Later other departments, including the engineering, valuation, mechanical, traffic, etc., and work from individual offices, such as the president's office, were drawn into this bureau, with the result that a force of 65 was reduced to 42, bringing a payroll saving of $49,284. A portion of this reduction is doubtless due to the depression but the system itself is entitled to a major part of the credit. The bureau has developed great versatility in all classes of work performed which include payrolls, vouchers, bills, A.F.E.'s, I.C.C. valuation reports, requisitions, statements of all kinds, daily passing and consist reports—all in addition to letters and telegrams.

Lack of system in correspondence is a frequent result of dictating to note book stenographers who, naturally, must be primarily available for the higher officers in a department. Subordinates, consequently, may find all stenographers engaged in taking dictation at the only times when they are free to dictate. Their correspondence is thus often badly delayed, and officers and employees lose time in awaiting the availability of a stenographer. By the use of dictating machines, however, the dictating can be done at any time and handled in a routine manner with the result that all correspondence receives prompt attention. One railroad reports that at the time of organizing a central typing bureau, with the installation of dictating machines, the average number of lines written by operators rose from 500 daily to an average of between 1000 and 1300. Another railroad reports that 8 operators working from cylinders are now doing the work formerly done by more than 20 stenographers, in addition to having absorbed the correspondence work of two other departments. A survey by this railroad of the savings incident to the installation of this equipment showed, in general, that on the average these savings paid for the equipment in less than a year's time.

The system is reported to be particularly successful in the case of technical departments, since the operator may have difficult or novel words repeated as often as necessary to understanding—a condition not possible with stenographic notes which may have lain over night without transcription. The life of dictating equipment is comparable to that of locomotives or shop machinery and the upkeep and operating cost is proportionately small.

Large economies are possible by the use of modern filing and record cabinets. Visible card records for control of supplies in place of bulky master stock books has brought great savings on a number of railroads. Cards used in one such system of visible records measure 8 in. by 10 in. and provide a record for eight years. They are made of a high quality of material to withstand handling and are placed in steel panels. At the top of each card is a description of the item, the material classification number and the section and rack where the material is located. Spaces are also provided to show unit, quantity, price and amount so that the annual inventories may be taken on the cards if desired. A small offset is provided on the panel so



Desks and Other Equipment Designed for Specific Tasks Eliminate Lost Motion in Clerical Work

Centralized Typing Bureaus, Transcribing from Records, Increase Operators' Efficiency Many Fold and Eliminate Overtime

that cards calling for material to be ordered may be moved over into this space if material orders are necessary, thus making plainly evident to the storekeeper just what materials are required as soon as stock is taken. These cards are then checked over and can then be turned over directly to a typist to make requisitions. Considerable time is saved by this method in comparison with the stock book system since, under that system, each page and each item must be scrutinized. By the use of celluloid tabs on cards surplus, obsolete and special material may be easily signalized.

In general it may be said that the system reduces expenses for stationery, lessens the work of stockkeepers, eliminates carbon copies, reduces space needed for stockbooks, curtails the labor necessary in checking of records and ordering materials by storekeepers and speeds up the work throughout.

Filing equipment designed to produce records quickly is an important factor to consider when the necessity for saving in labor costs is so great. None the less important are adequate fire resisting safes and cabinets where valuable records are concerned. Modern desks, cabinets, and record equipment are available which can save time and labor in all offices, by comparison with older and out of date equipment. A filing cabinet has recently been placed on the market for filing blueprints vertically. Each hangs from a thin, hinged channel, so that folding is not necessary and one blueprint can be located and removed without disturbing others in the file. Visible record systems are particularly adaptable to personal record departments and in pricing, claim and traffic solicitation work.

Duplicating machines—reproducing a large number of letters or circulars from a single stencil—offer large savings, as well as making it possible to give currency to important information which, by any other plan, would involve prohibitive expense.

Some time ago a large road had its tariff department make a time and cost study of the printing of tariffs as compared with the cost of duplicating these tariffs from typed stencils. The study took into account not only the stenographer's time and the duplicating machine operator's time, but also tariff mailing time, bradding and sorting. Two thousand copies of a single three-page tariff cost $9.77, effecting a saving in this instance of $32.27. This particular road estimates its annual saving at well over $5,000.

Many railroads are furnishing their traffic representatives with passing and interchange reports by this inexpensive process. The reports were being duplicated on large size sheets of paper and, especially in the case of the larger lines, were somewhat bulky and required considerable postage.

A method of condensing such reports by the use of a typewriter printing fourteen characters to the inch across and nine lines down to the inch in connection with the process, was suggested. It was found on analysis, verified by practice some months after the method was installed, that these roads could not only print these reports in smaller size, but save all the way from five to ten thousand dollars per year by such a plan. The new typewriter, used in connection with this process, has also proved a great economy to accounting departments, by almost completely eliminating the necessity for any duplicator printing a sheet larger than 8½ in. by 14 in.

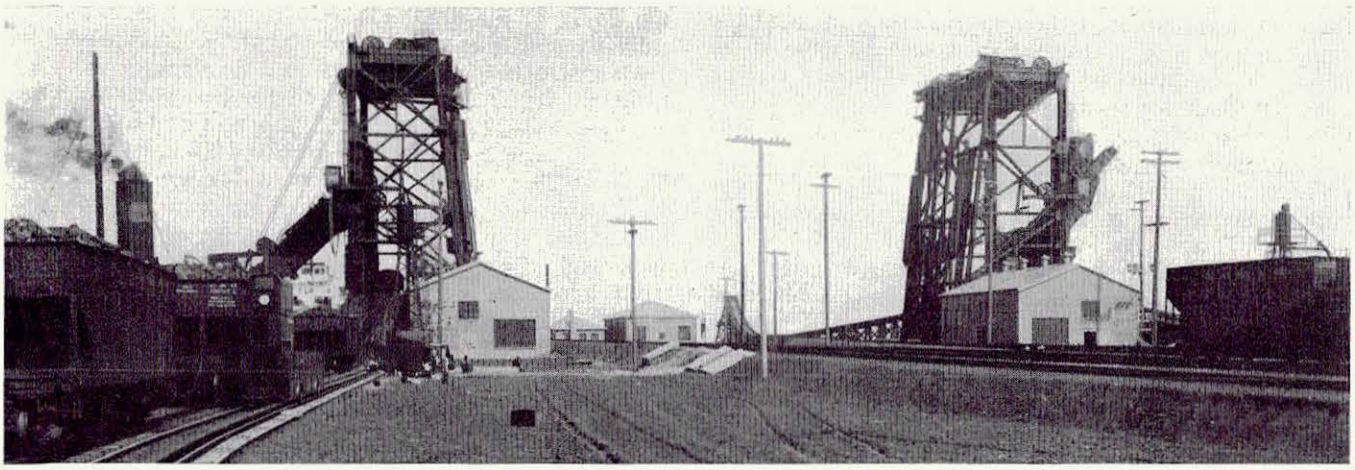
A variation of this process involves a machine which prepares stencils in quantities from electrotypes, with ruled forms or special designs containing permanent text, ready to be filled in with detailed information for duplication from the completed stencil. It eliminates the necessity for printing thousands of blank forms and then using these forms for the duplication in quantities of certain reports, statements, etc.

A relatively new development in promoting office efficiency has been a studied effort to eliminate noise. Tests conducted in a large office showed a decrease of 29 per cent in errors by typists and 52 per cent in errors by calculating machine operators when steps were taken to absorb noise. It is estimated that the undraped walls of a large office reflect 97 per cent of the sounds which strike them, thereby enormously increasing the unavoidable original sound. This huge magnifying of efficiency-destroying noise may be largely eliminated by the use of sound absorbing wall materials, which not only minimize sounds within a room, but insulate against those from without, a troublesome condition obtaining generally on railroads which have offices located near yards and terminals. Further noise reduction can be secured by the use of resilient and insulated bases for noisy machinery.

In Next Week's Issue

Confronted with the necessity of eliminating every unnecessary expense incidental to the operation of trains over railway grade crossings, junction switches and gauntlet tracks, many roads are taking advantage of the opportunities presented by automatic interlocking. The use of this comparatively inexpensive facility in replacing manually-operated interlocking plants, and in eliminating train stops at unprotected crossings, will result in attractive savings. In next week's issue, we shall describe how automatic interlocking is yielding substantial profits.

THE LANDSLIDE WHICH BLOCKED THE PANAMA CANAL a few weeks ago incidentally covered a section of the track of the Panama Railroad, a quarter of a mile in length, to a depth of 20 feet. A temporary track was built around the obstruction. Ships delayed by the temporary closing of the canal numbered, at the end of three days, seventy-nine; and the estimated cost of the detention was $2000 a day for each ship.



Two Coal Dumpers Provide Capacity for 100 Cars an Hour

Providing Enlarged Facilities for Coal and Ore

Chesapeake & Ohio makes extensive water-front development to enable it to handle important rail and water traffic more efficiently

IN order to provide adequate facilities for the prompt handling of its important coal and ore traffic destined to and originating at upper lake ports, the Chesapeake & Ohio has recently completed an extensive coal and ore dock improvement at Presque Isle, at the mouth of the Maumee river, near Toledo, Ohio. The construction of these facilities involved the moving of 3,357,000 cu. yd. of material, including the dredging of 2,572,000 cu. yd., of which 635,000 cu. yd. was wasted and 1,937,000 cu. yd. was placed as fill by the hydraulic method, the placing of an additional 635,000 cu. yd. of sand fill by the same method, and the removal of 150,000 cy. yd. by land grading; the construction of two slips, each of which is 260 ft. wide, one being 1,800 ft. long, while the other has a length of 1,500 ft., involving the construction of more than 7,500 lin. ft. of concrete dock wall; the driving of 18,000 piles, of lengths varying from 35 ft. to 45 ft.; the installation of 3,140,000 ft. b.m. of timber in foundation cribs; the driving of interlocked steel sheet piling along 4,075 ft. of dock front, which was left in place permanently; the placing of 65,000 cu. yd. of concrete; the laying of 35 miles of yard tracks; the erection of two coal dumpers and three ore-unloading machines, all of large capacity; and the construction of a complete locomotive water-supply plant including facilities for treating the water.

Coal and Ore Traffic Is Heavy

For a number of years this road has handled 7½ to 8 million tons of coal into Toledo annually that originates in the West Virginia and Eastern Ohio fields, and is destined for upper lake ports, the maximum monthly shipments having reached approximately 1,500,000 tons. While much of this coal originates on the lines of the Chesapeake & Ohio, a large tonnage is also received from the Norfolk & Western at Columbus, Ohio. The Chesapeake & Ohio is fortunately situated in that it handles a large return movement of iron ore from Toledo to furnaces in Southern Ohio and West Virginia, which tends to give it a balanced operation between this port and the coal producing territory on its own and connecting lines.

The coal transfer dock which served this traffic prior to the completion of the new facilities was constructed in 1913. It consists of a pier, two slips and two Brownhoist coal dumpers, each of which has a capacity of 50 cars an hour. Owing to the constantly increasing tonnage of coal hauled by the C. & O. going to the upper lake ports, this capacity became inadequate to handle it efficiently. This was not the only limiting factor, however, since the slips were too small to permit the proper maneuvering of loaded and empty vessels, while neither the loaded nor empty yard serving the dumpers was of sufficient size to give efficient service without an excessive amount of switching, and they could not be enlarged except at unreasonable cost.

Coal and Ore Docks Some Distance Apart

An objectionable feature of the terminal operation from the standpoints of efficiency and economy, was the fact that the ore dock serving the Chesapeake & Ohio was a joint facility with the New York Central, which had also been outgrown. Furthermore, it was located some distance up the river from the coal dock. Because of the great number of moderate-sized furnaces to which the ore handled by the C. & O. is destined, and the wide variety of unloading facilities at these plants, a large number of classifications must be made of the empty equipment before it is delivered to the ore dock. Since the track room in the empty yard at the

coal dock was limited, it became necessary to haul the empty cars back to Walbridge yard, several miles south of Toledo, for these classifications and then return them to the ore dock for loading.

To overcome these handicaps, as well as to provide ample room for future expansion, a site was selected at the junction of the Maumee river with Lake Erie. The property acquired for the purpose of this development contains 600 acres and lies in a strip of varying width and having a length of approximately two miles. At the lower end, a considerable area was either submerged or consisted of swamp land, while as the land recedes from the shore it rises to a sufficient height to make it ideal for this type of operation with a minimum amount of grading.

Character of the Shore Development

The water front development consists of two slips dredged to a depth of 23 ft., each of which is 260 ft. wide, giving ample room for maneuvering both empty and loaded vessels during arrival or departure, without recourse to tug service. The easterly slip, which serves the ore dock and one of the coal dumpers, is 1,800 ft. long. The westerly slip, which serves the second coal dumper, is 1,500 ft. long. The coal pier, which is located between the two slips, has a width of 290 ft. The ore dock, as developed at present, has a width of about 80 ft. which is just sufficient to accommodate the ore machines and the necessary trackage to serve them.

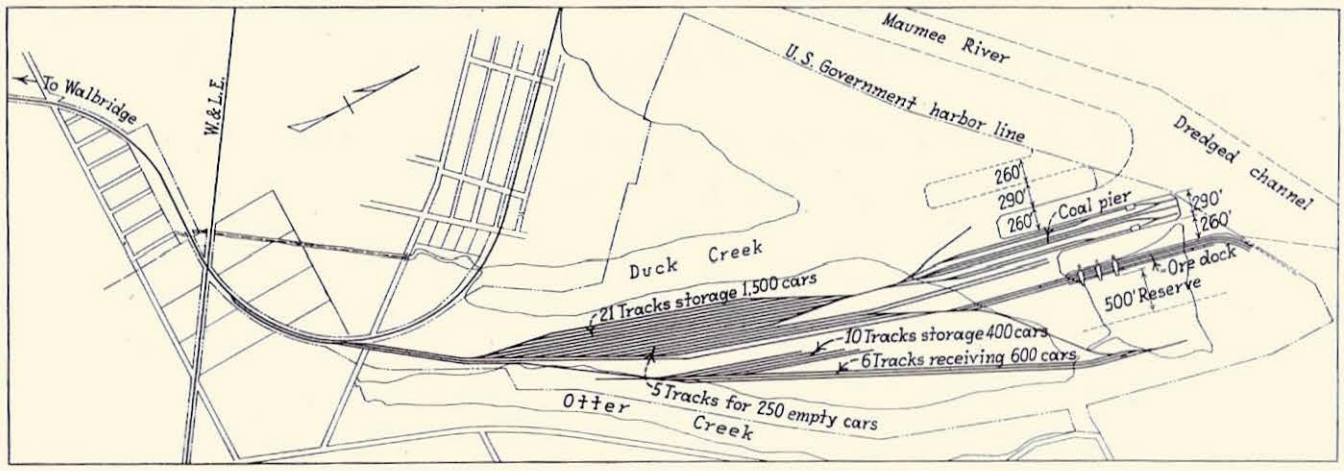
Provision has been made, however, for the construction of a third slip on the west and of an additional coal pier, upon which it will be possible to erect two more coal dumpers, in the event that the coal traffic increases to an extent that will warrant the additional facilities. For the present, however, the old coal dock is being retained to provide such additional transfer capacity as is required. Likewise, the plans for the future extension of the ore dock provide for a fourth slip on the east and an extension in width of this pier to accommodate a duplicate installation of the ore machines, a strip 500 ft. wide being reserved for this development.

Dock Wall Construction

The dock wall surrounding both the coal and ore piers is of concrete construction of the heavy gravity type. The under-water portion of the dock wall along the front of the ore pier consists of an open-bottom, sand-filled timber crib having a width of 37 ft. at the base and 25 ft. at the top. The crib is divided, both longitudinally and transversely, into 12 ft. compartments. It was constructed of mixed oak and hemlock, a total of 3,140,000 ft. b.m. being required for this purpose. The compartments at the rear rise to a height of 11 ft. above the base, which rests on a prepared foundation at a depth of 28 ft. below mean low water, or 5 ft. below the bottom of the slip, thus making it practicable to deepen the slip at a later date without disturbing the dock wall, if this should ever become necessary. The front and middle compartments, however, are 26 ft. high, and thus rise to an elevation 2 ft. below mean low water.

After the cribs were sunk, wooden piles were driven on 3-ft. centers inside of them before the sand filling was placed, to support the concrete superstructure. The concrete dock wall, which has a maximum width of 25 ft. 9 in. and a height of 12 ft. 8 in. above mean low water, also provides the support for the forward end of the traveling ore machines. The rear legs of these machines are supported on a concrete wall which rests at low water level on a pile foundation.

All of the remaining dock wall rests directly on pile foundations without the additional support of a crib. The slip is protected along this type of wall against encroachment from the embankment by a line of interlocked steel sheet piling driven behind the second row of foundation piles, which are spaced on 1-ft. 6-in. centers. Since this type of wall takes no vertical live loads, it has a maximum width of 16 ft. To insure against a possible tendency to crowd forward, both types of walls are anchored to the opposite walls of the piers they serve by means of 2-in. rods with turnbuckles, spaced 12 ft. 6 in. apart.



The Track Layout and Piers—The Light Lines Mark the Boundaries of the Areas Originally Submerged

The Track Layout

The track layout serving the coal and ore-handling facilities comprises 35 miles of yard and storage tracks, having a total capacity of 4,370 cars, while provision has been made for increasing this to 48 miles as need develops. The principal unit of the layout is a combined receiving yard for loaded coal trains and a storage and switching yard for empties. The receiving section of this yard consists of 21 tracks having a total capacity for 1,500 cars. The storage and switching section has a capacity for 250 cars. In addition, there is a system of nine tracks partly integral with this yard. Five of these latter tracks have a capacity for 100 cars each, and are used to assemble and hold as trains, such emp-

ties as are to be returned to Walbridge yard. The remaining four tracks, having a capacity for 250 cars, are used for storing empties, after classification, that are to be used for loading ore. There is also an additional receiving yard which holds 600 loaded cars, to which is appended a system of 10 stub tracks capable of storing 400 loads.

Two loaded yards and an empty yard are located on the coal pier. The loaded yards, one for each dumper, hold 120 cars each. The empty yard, which lies between the other two and which serves both dumpers, will hold 300 cars, sufficient to care for three hours of operation when both dumpers are working to capacity. The ore dock is served by 4 tracks, each of which holds 45 cars within the limits of the travel of the ore machines, although the total capacity of these tracks is about 75 cars each.

All loaded tracks are laid with 100-lb. relayer rails on tie plates, while the empty tracks are laid with 90-lb. rails without tie plates, although 100-lb. rails and switch material are used in the turnouts leading to these tracks. All of the frogs are of manganese steel construction and are of the rigid type. Creosoted crossties are used throughout, but untreated material was used for switch ties, and all tracks are ballasted on washed gravel.

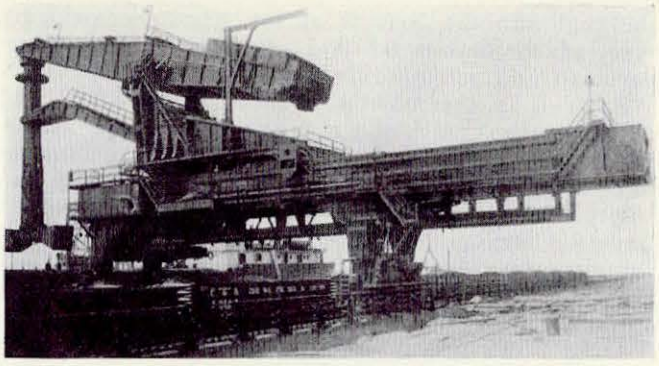
Grading

As has been mentioned, the greater part of the area covered by this development was either submerged land or swamp, although the water was quite shallow over the submerged track. The upper stratum over this entire area consisted of unstable silt and bog formation which could not be left in place, since it was incapable of sustaining the load imposed by the filling that was necessary to bring the land to the proper elevation for use. Accordingly, a dipper dredge was employed to remove all of the unsatisfactory material, amounting to 635,000 cu. yd., which was wasted at an assigned dumping ground several miles from the site of the work.

While the dock walls were under construction, a hydraulic dredge was placed in operation to excavate the slips and the area leading to the government channel at the mouth of the Maumee river. The material thus excavated, totaling 1,937,000 cu. yd., which consisted generally of a heavy blue clay, was deposited by the hydraulic method over the area external to the piers. A sufficient quantity was available to bring this area to only slightly below the required elevation, but lacked 635,000 cu. yd. of being enough to complete the grading.

Since the clay which formed the bulk of the filling was somewhat impervious to water, but very sticky when wet, it was desired to place a top layer of material which would provide a clean surface that would not be muddy in wet weather. For this reason, it was decided to complete the fill with sand, an ample quantity of which was available near a small island several miles from the harbor. The contractor employed a specially designed sand boat to bring in the 635,000 cu. yd. required for this purpose, pumping it from the hold and depositing it in place by the hydraulic method.

In addition to the quantity required to bring the general surface of the ground to final elevation, the entire amount of fill for the piers also consisted of sand similarly placed. The sand fill was covered with locomotive cinders as it was brought to grade to eliminate drifting under the high winds that frequently occur at this point. In addition to the dredging and the hydraulic fill, 150,000 cu. yd. of land grading was necessary in the construction of the loaded and storage yards which are located on the higher ground back from the shore line.



One of the Ore Unloaders as Seen from the Rear

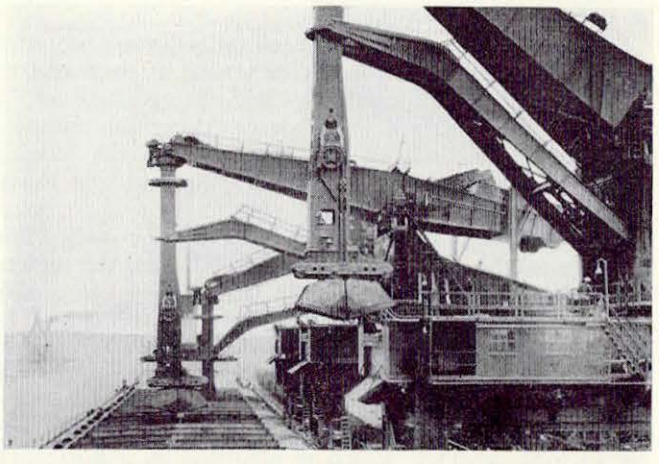
Coal Pier and Car Dumpers

Coal trains are brought from Walbridge yard to the receiving yard previously mentioned. From here they are placed by switch engines in the loaded yards on the coal pier, which are on a practically level grade. Three electric pushers are employed in each loaded yard to switch the cars to the dumper which it serves. One is placed between each pair of tracks, while the third works along the ladder and the approach to the incline leading to the dumper. They are equipped with arms which engage with the cars on either of the adjoining tracks.

The pushers switch the loaded cars to a barney, or car hauler, which takes them up the 12 per cent grade on the incline and places them in the cradle of the dumper. As a car reaches this cradle, it is engaged by clamps, elevated and rolled over, the coal discharging into a triangular-shaped steel pan, from which it flows into the vessel through a spout. As the cars move up the incline, they pass under a spout where they are drenched with water to minimize dust as the coal flows from the car to the hold of the ship.

Car Dumpers of Large Capacity

Each of the car dumpers has a capacity for 120 tons of coal in the car, and is capable of lifting and dumping a combined load of 330,000 lb., consisting of the car and contents, at the rate of 50 cars an hour. The heavy steel pan which receives the coal as it is dumped, can be raised and lowered to suit the varying heights of vessels as they take on cargo, and to facilitate their movement along the face of the dock as they are shifted during the process of loading. The spout which guides



The Three Machines Unloading a Cargo of Ore

the coal into the boat is of the telescopic swinging type, which controls the flow of the coal to the compartment and automatically trims it.

After it is dumped, the empty car is lowered and righted in the cradle, and is bumped off by the oncoming loaded car. It moves by gravity down an incline to a switchback from which it coasts down into the empty yard, this movement being controlled by car retarders. The cradle is also equipped with car retarders for the proper spotting of the cars, so that car riders are not needed for any part of the coal pier operation. From the empty yard on the pier, the cars are sent to the empty storage yard where they are either made up in trains for dispatch to Walbridge yard, or are switched and classified for ore loading.

Every operation on these dumpers is controlled electrically, the barney and cradle hoist controls being of the Ward-Leonard type. Two 500-hp. motors are used to operate the barney, while two others of the same size are employed to hoist the cradle. The 3-phase, 60-cycle, a-c. power is brought in over a high-tension commercial transmission line to a transformer station near the ore dock. Here it is stepped down to 6,600 volts and delivered to the power house which serves the coal dumpers. It is then transformed to d-c. power through motor generators, for use at 440 volts for the hoisting motors and 250 volts for the car pushers.

Ore Dock and Ore Machines

Three ore-handling machines of the Wellman stiff-leg all-electric type, designed for unloading from vessels directly into cars, have been installed on the ore dock. These machines, which are of the largest capacity and of unusually heavy construction, weighing 450 tons apiece, move longitudinally along the pier on tracks spaced 72 ft. 6 in. apart. Each track consists of two 130-lb. rails supported on tie plates on short creosoted ties which rest on the concrete dock wall. The gage of each track is 2 ft., the center line of the forward track being 6 ft. from the face of the dock. The machines are designed to excavate from ore-boats of typical sections and beams up to 65 ft., and discharge the ore directly into cars standing on any of the four tracks within the span, through disc hoppers and traveling lorry cars.

Each unloader consists of two parts: The main frame and cantilever, which traverses the dock; and the traveling trolley with bucket on top of the main frame. In operation, the bucket excavates from the boat and dumps into the disc hopper between the main girders at the forward end, from which the ore is discharged into a traveling scale lorry which transports it and deposits it in the cars.

The front and rear legs of each unloader are mounted on two 4-wheel, equalized drive trucks at each end of the sills and an additional 4-wheel spring truck at the center of the rear sill. The drive trucks are mounted in pairs and all wheels are connected to the moving motor through spur and bevel gearing and line shafting.

The disc hopper, which is located at the forward end of each machine, has a capacity of 50 tons, the dimensions of the hopper being such that the bucket is able to dump into it without spilling any of its load. The bottom of the hopper consists of two revolving discs which are driven by a motor located at the rear of the frame.

Each machine is also equipped with a traveling lorry of 40 tons capacity, which is mounted on a horizontal track that is suspended from the main girder and extends from the front leg to the rear end of the cantilever. The hopper is suspended from the main frame of the lorry by scales which have registering and recording beams placed in the cab which is located in the front part of the main frame. The gates are operated by means of a motor at the rear of the hopper extension frame.

Speed of Unloading

Speed is a prime consideration in releasing ore cargoes, and for this reason these machines are designed for high-speed operation. The trolleys and buckets make one round trip in 50 sec. with 17 tons of ore, the speed of travel being at the rate of approximately 100 ft. a minute. This gives an excavating capacity of 1,200 tons an hour per unit. To facilitate the loading of the buckets and to insure that they will obtain a full load on each trip, the bucket legs are so designed that they are capable of making a movement in rotation equal to 1⅝ revolutions.

Electric power is used for every operation, these machines being said to be the first ever to be operated by alternating current. The two main motions, the beam hoist and trolley travel, are operated by direct current with variable voltage control, but the remainder of the motions are made through straight a-c. full-magnetic controllers. The a-c. power is received from the main transformer station at 6,600 volts and stepped down for use to 440 volts. There are eight motors on each machine, having a combined total of 1,060 hp.

The empty cars are delivered to the ore dock by switch engines from the storage yard where they are held after classification for ore loading. On the pier, two electric pushers, duplicates of those used on the coal pier, spot the cars for loading and shift the loads to facilitate their removal.

Other Facilities

Other facilities include a complete office and record building at the receiving yard for the agent and operating officers who are in charge of the coal and ore traffic at the piers. Located near the outer end of the coal pier is a storehouse for supplies and repair parts for the coal and ore machines and a well-equipped machine shop for making repairs and other maintenance purposes. A boiler plant has been provided to furnish heat during the cold months of the shipping season.

It was also necessary to provide complete locomotive water supply facilities. Water is obtained from the lake through an intake inserted in the end wall of the coal pier. The water is handled by a duplicate installation of electrically-driven centrifugal pumps, located in the machine shop, each of which has a capacity of 250 g.p.m. against a head of 150 ft. It is pumped to a continuous water softener of the lime-soda ash type about the middle of the yard, from which it flows to a 24-ft. by 45-ft. steel service tank. The softened water is delivered to the locomotives through three water columns in the switching yard.

The work was planned and carried out under the general direction of W. Michel, chief engineer, engineering advisory committee on way and structures, Chesapeake & Ohio, and formerly chief engineer of the Hocking Valley. C. A. Whipple, district engineer, had general charge of all field and constructive operations.

The Great Lakes Dredge & Dock Company, Chicago, did the dredging and other grading and constructed the

piers. The coal dumpers and car pushers were furnished and erected by the Industrial Brownhoist Corporation, Cleveland, Ohio. The ore machines were furnished by the Wellman Engineering Company, also of Cleveland. The electrical equipment was furnished by the Westinghouse Electric & Manufacturing Company. All track work was done by company forces.

Wabash in the Hands of Receivers

JUSTICE Davis of the United States District Court at St. Louis, on December 1, appointed Walter S. Franklin, president, and Frank C. Nicodemus, Jr., assistant general counsel of the Wabash, as co-receivers for the railroad after the company had joined in a receivership suit filed by the T. J. Moss Tie Company, St. Louis, a general creditor. The tie company claims $49,651 is due it for ties delivered to the Wabash. Counsel for the Wabash and the Moss Company joined in suggesting the appointment of Messrs. Franklin and Nicodemus as receivers. No charge or suggestion of mismanagement was made in the receivership petition. Counsel for the Moss Company told the court that the Wabash is without funds to pay about $4,730,000 in ordinary current operating bills and had admitted that it cannot pay the Moss account and other obligations.

The answer filed by N. S. Brown, vice-president and general solicitor of the company, after admitting the allegations of the plaintiff, continued:

"Believing it to be its duty to its stockholders and creditors to protect its property and business and to treat the same as a trust fund for their security, the defendant joins in the bill of complaint and asks the court to take charge, through appointment of receivers, and thereby preserve the unity of its system of railroads and its corporate franchises, privileges and properties."

The road defaulted at the same time in $616,000 principal, plus interest due, on equipment trust certificates. Winslow S. Pierce, chairman of the board, issued a statement as follows:

"The Wabash Railway Company has felt constrained to acquiesce in the appointment of receivers for its property. This conclusion was reached with the utmost reluctance and after every practicable effort had been made to secure through banks, through its largest stockholding interest and through governmental aid the necessary funds to carry the company through the unparalleled conditions which have so disastrously reduced its revenues and its ability to meet its maturing obligations.

"In the situation confronting the company it was deemed to be the manifest duty of its management to accept the protection of the court to the end that undue preferences of creditors and serious property and service complications should be avoided and impartial and protective administration during the period through which we are now passing should be assured."

General W. W. Atterbury, president of the Pennsylvania, which has large holdings in the Wabash, made the following statement of that company's attitude toward the proceeding:

"The Pennsylvania deeply deplores the necessity for any railroad receivership.

"Pennsylvania Company, in 1927 and 1928, made a large investment in the stock of the Wabash Railway Company. The purpose was ultimately to further the principle of railroad consolidation envisaged by the transportation act, it being the hope of the Pennsylvania that the Interstate Commerce Commission would allocate the Wabash to the Pennsylvania under a four-party grouping of the railroads in Eastern territory. That plan has been embodied in the petition of the trunk lines now pending before the commission. It is the belief of the Pennsylvania that, if approved, such allocation will be of advantage both to the Pennsylvania and to the Wabash as well as to the public.

"The question was presented to the Pennsylvania as to whether it would be justified in increasing its investment in the Wabash Railway Company in the form of an extension of funds necessary to protect the company against receivership. The following considerations had to be taken into account:

"1. The Interstate Commerce Commission has decided that under the terms of the Clayton act, the Pennsylvania must cease and desist from a continuation of holding its stock in the Wabash. That question is pending before the courts.

"2. The commission's complete plan of consolidation, which has placed the Wabash in a different system from that in which the Pennsylvania is placed, and the pronouncement by the commission that no company in one system shall have any interest in or control over a company in another system.

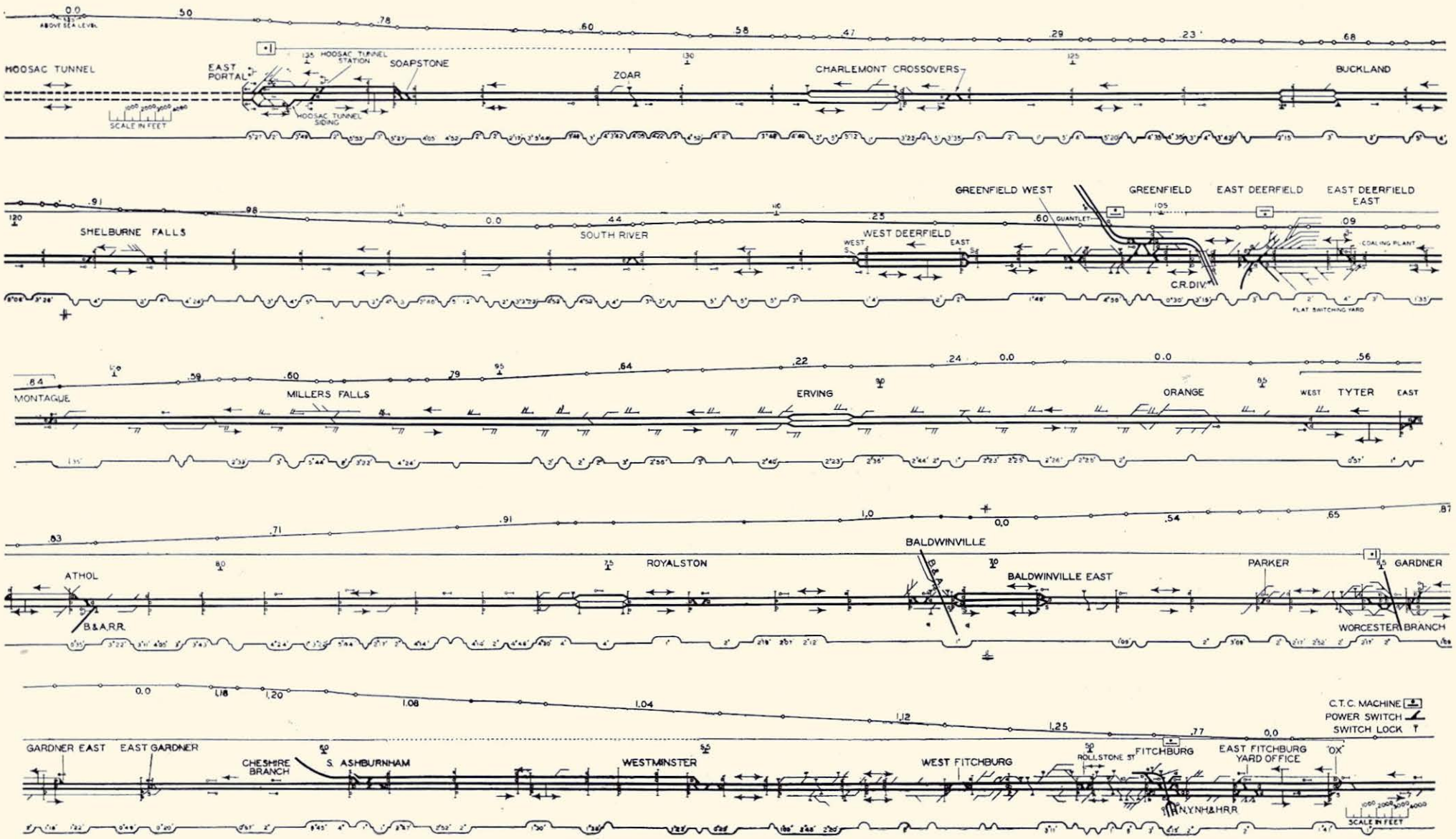
"3. The present and prospective deficits in meeting the maturities and fixed charges of the Wabash are of great immediate magnitude, and it is impossible to forecast for what period and in what amount they will continue to accumulate.

"In the face of the existing situation, the Pennsylvania feels that it should not add to the investment it has already made in the Wabash Railway Company. It is believed that the interests of the property, and of the investment the Pennsylvania has made in it, will for the present be best protected through a receivership under the control of the courts."

The company at the end of 1930 had funded debt totaling $141,845,387 and capital stock of $138,492,967. Its fixed charges in the same year were $7,314,065. Operations which were conducted at a small profit during the first half of the year have been lately producing deficits which have been mounting during the past few months.

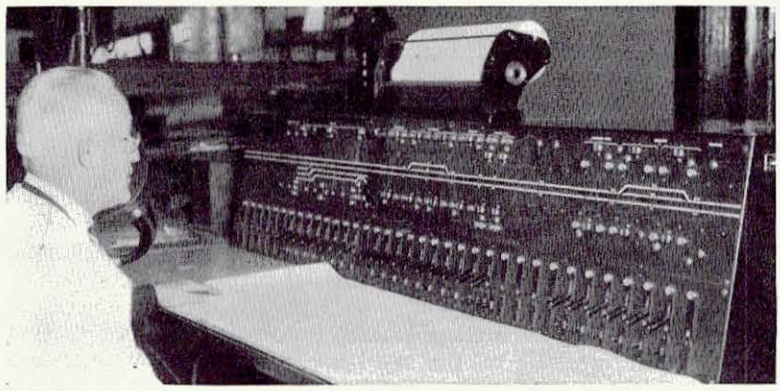
The company now in receivership dates back to November 1, 1915, when it took over the properties of the former Wabash Railroad. No dividends ever were paid on its common stock, although it made substantial disbursements on both classes of its preferred between 1925 and 1929. Per share earnings on common reached a peak of $6.95 in 1926 and were $1.76 in 1927. In 1928 they were $4.24; in 1929, $6.42; and in 1930, 31 cents.

The company had been greatly improved since federal control, and has offered a high grade service between the Niagara frontier, Southern Michigan, Chicago, St. Louis, Kansas City and Omaha. It profited largely from the heavy traffic resulting from the great development of automotive manufacturing in its territory prior to the crisis in 1929, and the decline in this traffic, due both to the depression and to the growing reliance of the automotive industry on highway transport for conveying its products, has contributed importantly to the company's present plight.



Track and Signal Plan of the Centralized Traffic Control Territory

Centralized Traffic Control on the Boston & Maine



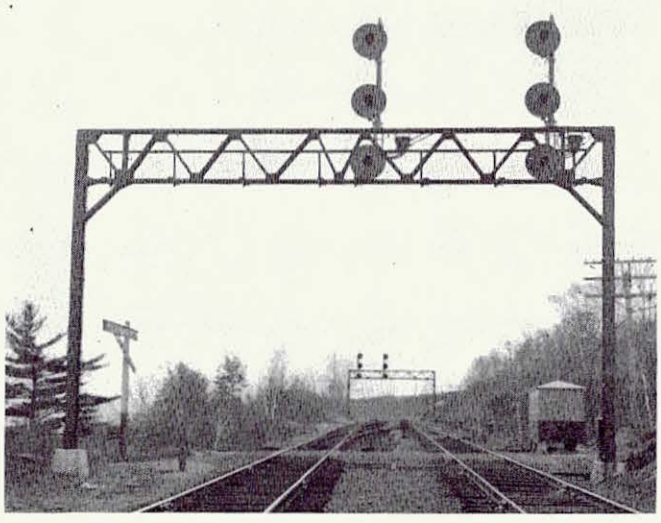
Control Machine in Dispatcher's Office at Greenfield

Extends over 76.7 miles of line, with 162 track miles and the control of two railroad crossing layouts

By A. R. Bacon

Field Signal Engineer, Boston & Maine, Boston, Mass.

THE Boston & Maine was one of the pioneers in the direction of train movements by signal indication, especially for either-direction operation on multiple-track lines, its first installation of centralized traffic control having been placed in service in March, 1929, on 13 miles of double track between Ayer, Mass., and North Chelmsford. (See *Railway Age* for June 8, 1929.) Since that time three new and larger installations have been made on this road, which extend over



Signals at East End of Center Passing Track at West Deerfield

143 miles of line, involving 263 miles of tracks. These recent installations have required an investment of $2,608,000 and are the most extensive applications of centralized control undertaken as yet on any road. One of these new installations, extending for 67 miles between Dover, N. H., and Rigby, Me., on the Portland division, is only partially completed as yet, while the two others on the Fitchburg division between East Fitchburg, Mass., and Tyter, and between East Deerfield and East Portal, were placed in service on August 30, and will be described in this article.

Operating Problem on the Fitchburg Division

The Fitchburg division is a portion of the B. & M. route from western connections in the Hudson River valley in New York to the interior of New England and on to seacoast points in Massachusetts and Maine. Under normal conditions, the traffic includes six passenger and about 12 freight trains each way, or a total of 36 through trains daily. The most important train is the "Minute Man," which is operated through between Boston and Chicago via the Boston & Maine and the New York Central. In normal times, the eastbound freight traffic involves from 750 to 1,250 cars, totaling from 30,000 to 60,000 tons daily. Likewise, the westbound traffic consists of 1,000 to 1,300 cars, totaling 29,000 to 37,000 tons daily. The principal freight shipments eastbound include coal, raw wool and cotton, automobiles, leather and hides, flour and such perishables as meats, fruit, vegetables and dairy products. Westbound shipments are chiefly manufactured articles such as boots, shoes, textile products, paper and lumber.

Schedules are arranged for early morning deliveries in Boston and other cities throughout New England. Likewise, cars loaded out of these cities are handled west the same night for delivery to western connections. Therefore, the train movements create peaks at different periods of the day and on different sections of the line.

Physical Characteristics of Line

As this section of the line passes through the Berkshire hills, the grades are heavy and curves numerous. The principal grades against westbound trains extend

between Fitchburg and East Gardner, 14 miles, and between Bardwell and the Hoosac tunnel, 24 miles. Likewise, a grade adverse to eastbound trains extends from Athol to East Gardner, 19 miles. Operation of trains is further handicapped by the line being almost continuously on curves, the maximum curvature being 6 deg. 45 min.

The line had previously been equipped with semaphore automatic block signals arranged for right-hand single-direction operation. Under this arrangement following trains moving at reduced speed on grades were bunched and unless slower trains were held on sidings, there was no means of running the faster trains around them. Several important manufacturing centers are located on this division, and interchange is made with other roads and divisions on the B. & M. at different points. The blocking of the main line while making many of the switching and interchange movements was an additional source of delay to through trains.

To Facilitate Train Movements

Therefore, the problem of facilitating train movements on this division included three factors: First, to increase the track capacity on grades so as to keep all trains moving; second, to use the maximum track capacity first in one and then in the other direction; and third, to use one of the main tracks for through movements while switching or transfer movements were being made on other main tracks in industrial areas.

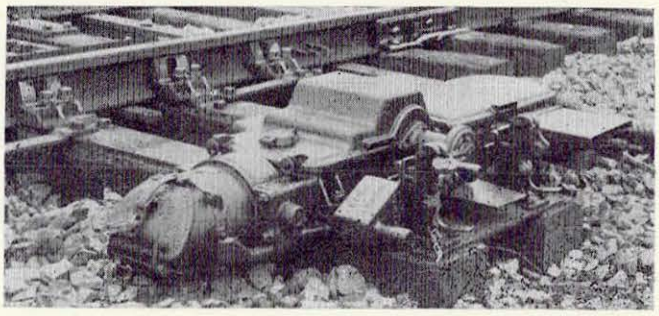
A detailed study was made of train operation, observers riding tonnage trains to secure actual results on which to base time-distance charts for existing as well as proposed methods of operation. After thorough study, it was decided to make certain changes in the track arrangement and to install a centralized traffic control system to permit the operation of trains in either direction on certain stretches of multiple track, to include power-operated switches for crossovers, and power machines or spring switches for passing tracks, so as to eliminate unnecessary train stops and delays; and to direct all train movements by signal indications, without written train orders.

In order that trains might be diverted from one track to another, that movements could be made to and from passing tracks, etc., with speed and safety, it was necessary to make extensive improvements in the switch layouts that were to be equipped for power operation. New layouts with No. 20 frogs were installed at main-line crossovers, ends of three tracks, junctions, etc., and No. 15 frogs were used at passing track turnouts. The passing tracks were lengthened to hold 100 cars.

Signaling for Directing Train Movements

Starting at Fitchburg, the line ascends at a grade in excess of 1 per cent all the way to East Gardner, 14 miles. Double-direction signaling was installed on each of the two tracks from Fitchburg to Westminster so that both tracks could be used at one time by trains going in either direction. On the five miles of three-track line between Westminster and South Ashburnham, the middle track is signaled for double-direction, and the two outside tracks for single-direction operation. From South Ashburnham to Gardner, single-direction operation is in effect on each of the two tracks.

Between Gardner and Tyter, where the grade ascends eastbound, double-direction operation is used on the north track and single direction on the south track. As no excessive grades are encountered in either direction between Tyter and Montague, 15.5 miles, the old semaphore automatic block signaling was left in service, trains being operated according to regular double-track rules with signal protection for single-direction operation on each track. Starting at Montague, the centralized traffic control extends westward to East Portal, double-direction operation being in service on the south track and single-direction on the north track on all the double track in this territory except for four miles from East Deerfield to Greenfield, in which section double-direction is effective on both tracks. It should be noted that double-direction operation is afforded through the important stations and industrial centers where transfer and switching movements are numerous. The method of operation is to turn over a section of one main track for the use of a "switcher" and use the other main track or tracks for the through trains. At Fitchburg, where the passenger station is on the north side of the main tracks, eastbound passenger trains can be crossed



Power Switch Machines Are Equipped For Dual Control

over at Rollstone street so as to stop on the track next the station. This permits the other track to be used for trains in either direction while a passenger train is making the station stop. On the accompanying diagram the double-headed arrows alongside the tracks indicate double-direction operation while the single arrows indicate single-direction operation.

The entire installation of centralized traffic control includes 76.6 miles of line, of which 8.8 miles is three track and the remainder two track, totaling about 162 miles of main track. Included in this territory are 22 "controlled points," each of which is equivalent to an interlocking plant, varying in size from one to 15 switches with the necessary signals and including two railroad crossings. The track layout and method of operation at some of the more important controlled points will be described in detail later. The field equipment includes 150 power-operated and nine spring-operated switches, with 709 signal units located at 338 points. In addition, 48 outlying hand-thrown switches are equipped with electric switch locks controlled from the respective machines. The General Railway Signal Company furnished the equipment and handled the construction for the entire installation.

The Fitchburg Section

The centralized traffic control territory is divided into five control sections, the control limits for each machine being indicated on the diagram by the line extending through the symbols representing the towers. The machine in the tower at the New Haven crossing at Fitchburg controls the territory from the east end of the Fitchburg yard, "OX," to Westminster, which comprises 11 controlled points, with 34 power-operated and one spring-operated switches. This control machine is operated by a train director who reports to the chief dispatcher at Greenfield.

A line of the New Haven crosses the B. & M. just east of the station at Fitchburg, and a mechanical interlocking formerly protected the crossing and operated the switches and crossovers nearby. This plant was replaced by a centralized traffic control type of machine located in a new brick tower near the crossing. This new machine not only controls the functions formerly included in the interlocking, but also the territory from OX to Westminster.

Several other layouts are controlled from the machine in the Fitchburg tower. For example, the two main-line crossovers at Rollstone street, together with the four signals, constitute a controlled point and the same type of a layout at West Fitchburg forms another such point. The Westminster controlled point includes the three main-line crossovers, a single switch and five signals, the layout providing for double-operation on both tracks east of this point and also serving as a two-track to three-track junction. Westminster is the west limit of the control section for the Fitchburg machine. However, the train director in charge of this machine must co-operate with the man in charge of the Gardner control machine in order to direct train movements from one section to the other.

The Gardner Section

The centralized machine in the tower at Gardner controls the territory from South Asburnham to Tyter West, comprising 11 controlled points with 33 power and five spring-operated switches. This machine is operated by a train dispatcher whose territory also extends west to Montague. At South Ashburnham the junction to the branch line was moved a mile eastward in order to avoid placing the new crossovers on a 4-deg. curve, the best available location being on curves from 1 to 1.5 deg. This controlled point includes four main-line crossovers and six signals, the west switch of the most westerly crossover being spring-operated, no provision being made for a movement from the branch line to the north track.

A passing track, over two miles long, extends from East Gardner to Gardner, the east end being far enough over the top of the grade so that a train standing on this end of the passing track will be on a practically level grade. The switch at the east end of this passing track at East Gardner is spring-operated and three signals are provided to direct movements. The mechanical interlocking plant which protected the crossing of the Worcester branch and operated the switches nearby, was continued in service, the new centralized control machine being located in the tower, and one man operates both machines. The centralized traffic control system is continuous through the mechanical interlocking plant at Gardner,—that is, the operating results are the same as if the switches and signals were handled by centralized control levers.

At Baldwinville a middle passing siding is controlled, which, like the other middle sidings, is track circuited and signaled for through running. Spring switches are used for those switches, which are always trailing. Combined with the layout at the west end of the passing siding are two main-line crossovers and the railroad crossing of the Boston & Albany. The home signals on the B. & A. are controlled from Gardner.

The East Deerfield Section

The centralized traffic control machine in the new tower at East Deerfield controls the territory from Montague to East Deerfield, comprising 4 controlled points, 17 power switches and one spring switch, together with flat switching facilities at the west end of the yard, involving 18 switches. This machine is operated by a train director reporting to the chief dispatcher.

The controlled station at Montague includes four signals and a crossover facing for movements from the westward main to the eastward. The layout at East Deerfield East includes the leaving switch for the east yard and the entering switch to the west yard, together with a main-line crossover. This crossover, together with the single main-line crossover facing from the westward to the eastward track, at Montague, provides double running on the eastward track so that a train may pass around a westbound freight train taking coal and water at East Deerfield East.

The layout at East Deerfield consists of the west entrance of the eastbound East Deerfield yard and the exit from the west end of the westbound yard. Two main-line crossovers are provided, as well as a connection with the Connecticut River division and a New Haven transfer connection. In all, there are four crossovers, three turnouts, and 11 signals. These switches are operated by 110-volt d.-c. switch machines. The centralized traffic control machine is located in a new brick tower in the approximate center of this layout. In addition, this machine controls the operation of 16 single switches and one crossover operated by switch machines with trailable features. These switches are operated on the so-called "flat-switching yard" principle, no signals being used, but these switches are equipped with electric target lamps.

The Greenfield Section

The centralized traffic control machine in the dispatcher's office at Greenfield controls the territory from Greenfield to Zoar, comprising nine controlled points with 33 power and two spring switches. This machine is operated by a dispatcher who, in addition, dispatches trains on the territory between Troy, N. Y., and Rotterdam Junction, as well as on three single-track branch lines.

The Connecticut River line crosses the Fitchburg division on an overhead viaduct and comes into the Greenfield station parallel with the Fitchburg division, forming a four-track system for a short distance. The Greenfield layout consists of a set of crossovers in each direction between these mains, together with one turnout. Therefore, to permit switching at the Greenfield layout and also at East Deerfield without interfering with each other, controlled signals are located midway between, with a stagger of about 1,500 ft. These signals are controlled from the East Deerfield machine. To permit free use of both mains in switching, the tracks between East Deerfield East and Greenfield West are signaled in both directions on both tracks.

A universal layout with two crossovers and four signals is located at Greenfield West. From this point to Soapstone the eastward main is signaled for movements in the westward direction, providing two tracks up the grade with only one track down the grade. Just north of the station, on the Connecticut River line is a gauntlet in the double track, which passes through a short tunnel under a street. The signals governing over this gauntlet track are controlled from the Greenfield machine.

The centralized traffic control machine in the tower at East Portal controls the territory from that point to Soapstone, comprising three control points with 10 power-operated switches, and is operated by a towerman under the direction of the tower director at West

Portal. A double-track line extends through the Hoosac tunnel, which is 4.7 miles long. A system of signaling for directing trains in either direction on both tracks through the tunnel, which has been in service for several years, is connected with the new centralized control machine to form, in effect, a continuous system.

Description of System

The centralized traffic control system employed on the Fitchburg division is the General Railway Signal Company's unit wire system. On this installation it was felt desirable to provide directional control and signal indication. One wire is used for a switch or crossover control and an additional wire for the control of a group of associated signals.

The switch levers move up and down and are used in two positions only, the down position being normal. The track model and the arrangement of the levers are such that the switch points are directly over the levers by which they are controlled and on two-inch centers, the switch points being operated mechanically by the levers. The switch and track indication lights are located above their levers and above or below the track diagram, depending upon which track they belong to.

The signal levers are three-position rotary switches with arrows on their faces. These arrows point upward when in the normal position and to the right or left to clear a signal governing in the direction the arrow points. These signal keys are located as nearly as possible midway between the signals governed, being above the diagram for the upper track and below for the lower track. The signal indication lights are as a rule placed on the diagram in line with their control levers, and as nearly as possible in their relative positions with respect to the switches. Arrows on the face of the signal indication lamps, pointing in the direction that the signals govern, are illuminated when the signals are clear.

Recorders are provided on the Fitchburg, Gardner and Greenfield machines, the latter taking care of the records necessary for the sections covered by the East Deerfield and East Portal machines. These recorders are of the type which operate automatically upon the manipulation of the train tokens which are moved along by the operator in accordance with information regarding the train positions received by OS lights. Provision is made for three trains between any two OS points so that distinct marks are made for each train. More than three trains can be identified by pulling a token out and reinserting it.

The whole territory was re-signaled with color-light signals, replacing two-position lower-quadrant semaphore signals. All home signals governing in the direction of traffic are three arm, including those signals governing movements out of sidings. American Railway Association speed signaling has been employed throughout. For example, the signals governing movements out of sidings have a fixed top arm, the second arm being used for trains when the block is clear. The bottom arms govern all routes, including the route of the high and medium-speed signals when the blocks are occupied by a train proceeding in the same direction. An exception is that no signal is given against the established direction of traffic. Approach signals governing movements to controlled points, or, in other words, to three-arm signals, are two-arm, the lower one staggered to the right. When clear, this signal shows two green lights, the other aspects conforming with A.R.A. practice.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading continues to approach more closely the figures for the past two years. In the week ended November 21 the total was 653,503 cars, a decrease of 126,249 cars as compared with the corresponding week of last year and of 296,213 cars as compared with 1929. Grain and grain products and livestock showed increases as compared with last year and miscellaneous freight showed an increase as compared with the preceding week. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, November 21, 1931

Districts	1931	1930	1929
Eastern	144,811	175,072	206,879
Allegheny	126,933	156,009	200,346
Pocahontas	40,408	46,159	57,327
Southern	97,845	117,910	138,199
Northwestern	75,973	89,474	114,573
Central Western	107,380	125,477	150,501
Southwestern	60,153	69,651	81,891
Total Western Districts	243,506	284,602	346,965
Total All Roads	653,503	779,752	949,716
Commodities			
Grain and Grain Products	36,872	36,348	39,780
Live Stock	25,555	24,845	29,821
Coal	116,699	147,923	188,718
Coke	4,850	7,441	11,154
Forest Products	21,325	33,111	54,864
Ore	4,901	8,223	15,744
Mdse. L.C.L.	209,032	229,521	257,825
Miscellaneous	234,269	292,340	351,810
November 21	653,503	779,752	949,716
November 14	690,366	829,023	982,926
November 7	717,029	881,517	1,048,968
October 31	740,363	934,715	1,072,234
October 24	769,673	959,492	1,134,360
Cumulative total, 47 weeks	34,440,342	42,395,342	48,653,281

The freight car surplus for the week ended November 14 averaged 588,377 cars, an increase of 29,099 cars as compared with the week before. This included 308,506 box cars, 214,073 coal cars, 26,422 stock cars, and 11,342 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended November 21 amounted to 53,164 cars, which was a decrease from the previous week of 2,801 cars despite the holiday in the previous week. Grain accounted for a decrease of 3,534 cars, the western division being down 3,437 cars and the eastern division, 97 cars. Sub-zero weather and snow in the Prairie provinces were undoubtedly large factors in this decrease although the country elevators have large stocks of grain on hand.

Compared with last year's loadings the total was down by 7,182 cars, 5,320 cars in the eastern division and 1,862 cars in the western division. Coke and pulpwood were the only commodities to show increases, the increase of 921 cars of coal in the western division being more than offset by a decrease of 1,573 cars in the eastern division. Merchandise continued to show an improvement, amounting to 14,900 cars as against 14,134 cars the previous week.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
November 21, 1931	53,164	21,869
November 14, 1931	55,965	21,862
November 7, 1931	61,194	21,886
November 22, 1930	60,346	31,435
Cumulative Totals for Canada		
November 21, 1931	2,349,497	1,187,913
November 22, 1930	2,904,197	1,561,148
November 23, 1929	3,249,443	1,926,629

Pool Plan Argued Before I. C. C.

Commission told some railways will not assent to gift basis, some shippers oppose loan proposal

WASHINGTON, D. C.

INSISTENCE by the Interstate Commerce Commission on the method of its proposal for pooling the proceeds of a rate increase on a "dole" basis would completely wreck its plan and its purpose to prevent railroad receiverships, the commission was told on November 28 in argument on the petition of the Association of Railway Executives that the rate increases be treated as the property of the railroads performing the service and loaned to roads failing to earn their fixed charges. Alfred P. Thom, general counsel of the association, said that the roads had tried in good faith to co-operate along the lines suggested by the commission but had found insuperable legal obstacles and had finally agreed upon the plan filed with the commission on November 19 "on a business basis as much as possible."

Mr. Thom characterized the commission's plan as "illegal" and "impossible," although actuated by a high purpose, and frankly said that the obstacles in the way of it are so great that it was feared that the necessary assents could not be secured.

Adoption of the loan plan was opposed by counsel for certain shippers and western state commissioners, who said the railroads should be required to accept or reject the commission's plan as outlined in its report in the 15 per cent case; that the commission never intended that the more prosperous roads should have any rate increases and that the temporary emergency increase offered by the commission was to be the shipper's contribution to the weaker roads. This position was taken by C. E. Cotterill, for the Southern Traffic League, T. D. Geoghegan, representing Virginia livestock shippers, and John E. Benton, representing the legal committee of the western state commissioners. The National Industrial Traffic League, whose counsel had suggested the pooling plan during the rate case, took no position for or against the loan plan.

Members of the commission asked many questions but there was little show of hostility to the loan feature of the plan. There seemed to be more possible objection to the request for an elimination of the commission's requirement that any reductions in rates be taken from the "basic" revenues, in order to preserve the integrity of the pool fund, and Commissioners Mahaffie, Eastman, and Aitchison kept asking if any increases beyond those now proposed should not be added to the fund.

Legal Features

Mr. Thom said that many railroad directors had been advised by counsel that to comply with the commission's plan would render them personally liable to any objecting stockholder and that there had been serious threats that any effort to do so would be at once enjoined. Whether or not such an action could be sustained, he said, this would involve litigation and delay and put an end to the co-operation which the roads are willing to undertake under their own plan.

He said there is no question that the proposed rates must be considered reasonable since they are necessary for the preservation of the railways, that are earning less than half of a fair return, and since the question whether the traffic can bear them has been answered in the affirmative by the commission. The conclusion follows that the earnings from the proposed rates would belong to the carriers that earn them. He also said that the proposed pool is not such a pool as is contemplated by section 5 and there is no authority in law for it, because carriers would be required to participate in it that would be given no opportunity to share in the benefits. The kind of pool contemplated by the law is based on reciprocal commercial advantages whereas that proposed by the commission would require an illegal division of earnings. The railroad business still remains a commercial business, he said, and nowhere are the railroads given the right to engage in eleemosynary enterprises.

The principle differs from that involved in recapture and divisions cases, Mr. Thom said, because there is no recapture except from earnings exceeding a fair return and the principle has no application where a carrier cannot earn a fair return even with the rate increase. The same principle applies as to divisions of joint rates.

When Commissioner Lewis asked if the same legal difficulties would not apply to a plan for making loans which may not be repaid, Mr. Thom said the roads had considered that question and did not think so. There may be some possibility that some of the money may not be repaid but the companies that assent are willing to take that risk. It is not proposed to make a loan to a company that even with a loan would default on the principal of its obligations.

"We think we can get enough assents to this plan to make it a workable plan," he said. "We think there is hope in this proposal. We know that enough will not come into a gift plan to make it workable and we know it would be enjoined." When Commissioner Eastman asked under what section of the law the railroads' plan is proposed Mr. Thom replied that it is not under any section but under the commission's report.

It is inconceivable, Mr. Thom said, that the commission would subordinate to a method its main purpose to stabilize the railroad industry and prevent a great public catastrophe when confronted by the fact that what it conceived would not accomplish the purpose and the same thing can be accomplished by another method to which there is no objection. "I have credited this commission with a purpose as high as that of anyone and cannot conceive that it will permit that great purpose to be wrecked by insistence upon a gift plan which is impossible at this time of distress when we are trying to prevent additional commercial disasters."

Loan Plan Accomplishes Desired Purpose

The loan plan, he said, accomplishes the same high purpose the commission had in mind in a way that would have no different effect upon the shippers and

the loans would replace fixed charges in a form that could not cause distress and would be payable only after a considerable time. The proposed Railroad Credit Corporation would have discretion to forbear payment of interest in special cases and would have every power necessary to accomplish the purpose of the commission to prevent defaults and receiverships. Unanimous agreement among the roads may not be necessary, Mr. Thom said, but it is hoped there may be such an agreement if the commission approves the plan.

Participation of Subsidiaries

When Commissioner Lewis called attention to the proposal that each carrier reporting separately to the commission shall be allowed to participate in the plan, whereas the commission had proposed that the accounting be by systems, Mr. Thom said that matter had been the subject of long debate but that the conclusion was reached that it would not be fair to require a parent company to make contributions to the fund and also to support its subsidiaries. He pointed out, however, that carriers are not required to rely on their operating income alone but are to use their other income and resources.

Commissioner Farrell asked if the commission could compel a carrier to make a loan. Mr. Thom replied that it could not attach such a condition to the establishment of reasonable rates but that the good faith of the carriers could be relied upon in this instance.

In support of the request that the per car increases be converted into cents per net ton, Mr. Thom pointed out that the railroads serving Hampton Roads ports have coal cars of 100 tons or more, while those serving other sections generally have smaller cars, and that it would be unfair to give a commercial advantage to the shippers served by roads using the larger equipment. He said there was no intention of seeking any greater advance than that suggested by the commission.

Treatment of Future Reductions

J. M. Souby, commerce counsel of the Union Pacific, presented the argument for eliminating the requirement that if, for competitive or other reasons, the carriers reduce any of the rates increased, the amount of the decrease should be taken from the basic rates. He said the commission's apparent feeling of distrust that certain carriers would try to gain an advantage for themselves by reducing rates was probably justified if the pool were to be placed on a gift basis but that the situation would be changed if the increases are to be treated as the property of the carriers collecting them. The proposed requirement, he said, would tend to prevent adoption of the plan by some carriers, including the Union Pacific, because the necessity will surely arise for some reductions and it would be unfair to require a payment into the pool from rates that might be lower than they were before the increase. This, he said, would be penalizing railroads for doing what is their duty under the law, to establish just and reasonable rates. When Commissioner Mahaffie asked how he could differentiate in the treatment of reductions and any further increases that might be made he said the latter would be outside the case. Commissioner Eastman, however, retorted that the case is not closed and that the commission has invited the roads to come in and propose increases in specific rates.

Mr. Thom and Mr. Souby later suggested that the commission create a board to determine what are proper rate reductions, following the practice established while the roads were under a guaranty for six months following the termination of federal control in 1920. He said he did not know what would be right as to later increases but would accept the commission's conclusion.

Commissioner Eastman asked if the proposed rate increases are not in the same category as tariffs not yet suspended. "Not after what you have said about them," Mr. Thom replied. "You have said that the traffic can bear them."

Objections to Railroad Plan

Mr. Cotterill and Mr. Benton defended the pooling idea as being authorized by section 5 and cited the Dayton-Goose Creek and New England divisions decisions of the Supreme Court as authority for using revenues collected by one railroad for the benefit of others. Mr. Cotterill said that the cardinal scheme of the transportation act was to treat the railroads as a national system for the protection of the weaker roads by the stronger. When he also referred to the earlier pooling practices of the railroads Commissioner Aitchison referred to the agreement made by the railroad executives in 1917 to sink their individual interests because of the war emergency. Mr. Cotterill said the commission had held that the carriers had not established the legality of a rate increase and he asked how a carrier could be said to be deprived of anything by being put in the position of a collecting agency. He urged the commission to adhere to its report in all respects or revoke it, saying that "the loan plan does not fit in."

Mr. Benton said that under the railroad plan fixed charges would be accumulated as interest-bearing obligations, and that the railroad argument lost sight of the fact that the proposed rates had not yet been found to be just and reasonable. He said that the use to be made of the proceeds is one of the elements of reasonableness. He said the carriers' plan is not a modification of the commission's plan but an entirely different one.

E. S. Gubernator, for the Lehigh Portland Cement Company, asked the commission not to do anything to deter the railroads from making reductions contemplated to meet truck competition.

Mr. Geoghegan, representing livestock shippers on the Norfolk & Western and Chesapeake & Ohio, who in his brief in the case had advocated most of the elements of the commission's proposal for a temporary emergency surcharge, said that the loan plan is entirely different from that proposed by the commission and that if there is to be a loan it should be from the shippers to the needy carriers and returned to the shippers rather than to the more prosperous railroads. He also said the integrity of the pool would be seriously menaced if the carriers were allowed to reduce rates which would otherwise contribute to the pool.

R. C. Fulbright, speaking as chairman of the "neutral" special committee of the National Industrial Traffic League, said the members of the league had been asked in a circular letter to express their views but that only 12 replies had been received from a membership of 800, of which 4 were opposed to the loan plan and 3 thought it was all right. Apparently speaking for himself, Mr. Fulbright said that to load the plan down with requirements as to collateral and the current rate of interest is not going to help the credit position of the railroads and that the loans should be unsecured and at a very low interest rate. For the Southern Pine Association, he was impressed

(*Continued on page 868*)

Stocks of Supplies on the Southern Pacific, All Purchased to Specifications

The Significance of Specifications in Purchasing Steel*

Economy, uniformity, fair competition and progress require scientific methods of buying supplies

By P. Parke

Chief Engineer, The Pullman Company, Chicago

THE trend is toward the crystallization of more knowledge and the elimination of mystery concerning the things with which we deal in every-day life. In its economic significance, the specification is an aid to the progress and well-being of mankind.

In general, material specifications are of particularly economic importance to the large user of steel in that:

(1) They are evidences of the fact that thought and study have been given to the service requirements for which a particular material is intended.

(2) They constitute a standard for measuring and checking materials as supplied. Such checking insures against delay and waste in fabricating plants which would occur with improper materials.

(3) They are invaluable to the large consumer who commonly draws his material from several sources of supply. Their proper application, in such cases, insures that materials from different sources will be of uniform and suitable quality.

(4) They promote the highest and best use of materials for each particular purpose.

(5) They open a field of fair competition.

It is obvious that when a purchaser orders materials to a specification, whether it be his own specification, the manufacturer's or one prepared by a technical society, he has studied his requirements and concluded what materials are most suitable for his purpose. In ordering to specification, he benefits from all the research, experimental and development work of which the specification is the final summary.

The question may be asked: "Why so many sources for specifications? Why not buy to the manufacturer's specification?" The answer to the latter part of the question is that this is frequently done; and to the first part, the answer is that the individual manufacturer's specification commonly represents the product which he can most conveniently produce. The manufacturer's specification is valuable as a guide to the trade, though it may not precisely comply with the requirements of the buyer. Specifications supplied by an organization have a greater value because they represent the results of the composite effort of the various interests making up the trade as a whole. In many cases, the specifications of a technical society are compromises, but in all cases they are reliable and are a valuable guide to consumers. But, many users have problems of their own, necessitating studies and investigations which may indicate certain modifications or deviations from standard specifications. The usual procedure in such cases is to formulate the user's specifications on the substantial foundation already laid. As experience shows the way, he revises the specifications and keeps them up to date. The thought, study and compilation of experience in-

* From a paper presented before the American Society for Testing Materials.

cident to this process must inevitably be of value alike to the manufacturer, the user and the industry as a whole.

Helping the Manufacturer

All products of one industry, as they become the materials of another, must be carefully checked. The user of steel must know that the material supplied to him is precisely what he wants so that it can be put into production without confusion or delay. If an error is discovered after production starts, the result will be a shop tie-up, with machines idle and production schedules disjointed until replacement is made. With improper material, a costly amount of scrap must result. Without specifications, there are too many chances for something to go wrong. The purchaser may leave the specification to the producer, who will do his best to supply precisely what is wanted, for in such cases he commonly guarantees his product. But something may go wrong either through lack of complete understanding or through error in the producing plant. In that event, the user, not having ordered to specification, must rely on the manufacturer and has no means of checking the material before starting production.

Improper material will cause delay and expense to the user because, while the manufacturer replaces defective material, he does not stand the consequent expense incidental to delay. Sheets and plates for example, may be perfectly proper for certain uses but undesirable for others. One user may emphasize strength; another ductility for cold pressing steel; another may require a special surface finish and uniform thickness. Again, in forging steel, one user may require the maximum degree of ductility for materials subject to shocks; another may need the maximum strength where stiffness is important; and yet another may find that the cheapest grade of material will answer his purpose, and that to use anything more expensive would add to his cost without in any way improving his product. A specification to cover the precise requirements is the best and only assurance of obtaining entirely suitable material.

Sources of Supply Increased

It must be apparent that specifications are of particular importance to insure a uniform quality of materials from different sources. A user of steel may require deliveries at widely-separated localities, but of absolutely uniform quality. If, for example, we require steel wheels delivered at the Atlantic seaboard, we do not order them from Chicago; yet we must be sure that wheels, from whatever source, shall conform to a rigidly fixed and uniform standard of quality. Both safety and economy in wheel service depend upon the closest adherence to the standards which have been developed and proved by service. It is highly improbable that anyone in a position of responsibility would purchase or use in passenger service steel wheels from a variety of sources on the manufacturers' guarantees, without a specification to insure uniformity. All manufacturers have not had the direct service experience so essential to safety and economy in wheel operation. Only when the cumulative experience of wheel-makers and wheel-users is embodied in a specification can uniformity be insured among wheels drawn from a variety of sources.

It has been said that specifications promote the highest and best use of materials. To this end, of course, a specification fully outlining the requirements is essential. The user, from his experience with various grades, is in excellent position to tell what grade of material will answer his purpose. There comes a time when special analysis and thought on the most economic use of materials are of first importance. Thus we may ask: "Are we getting all we can out of carbon steel? Can or should alloy steel be substituted?" In asking these questions, we may have in mind consideration of strength, or safety, or of economy. When it comes to the soundest economic use of materials, the employment of specifications in inquiries for material not infrequently leads to helpful suggestions from manufacturers. Their experience may have enabled them to suggest certain changes in specifications through which costs may be reduced. Thus, the highest and best results economically will be obtained from sheet steel when no useless finishing labor is expended on it. A high degree of finish should be used only where it is essential; plain rolled mill finish should be used where it will answer as well. At times, the highest and best use of sheet steel may justify the use of a more costly alloy product; and the principle of best use will be promoted by a full knowledge of the possibilities of the product as embodied in complete specifications.

Finally, we come to the proposition that the use of specifications opens a field of fair competition. If it is true that competition is the life of trade, then it seems equally true that only by the use of specifications can a fair competitive field be insured. How else can a user make known his precise requirements to competing manufacturers in such a way as to insure that they will all have precisely the same understanding of his needs? It simply cannot be done. Steel wheels, for example, are a highly competitive product; but they are such only because of the use of specifications. If any quality steel is needed, a specification showing the requirement immediately opens up a competitive field.

Pool Plan Argued Before I.C.C.

(*Continued from page 866*)

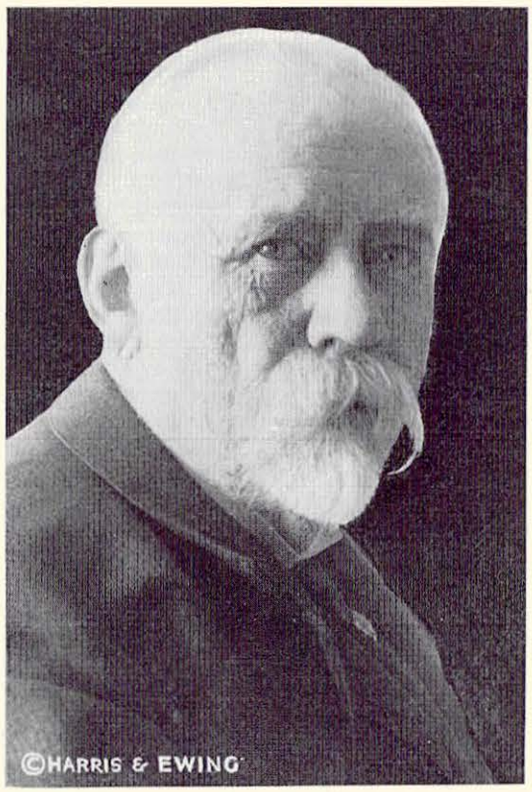
with Mr. Cotterill's argument. Luther M. Walter, who as counsel for the league committee had suggested a pooling plan during the hearings, made no expression as to the plan on argument but presented a request from the New Orleans Public Belt Railroad that there should be no increase in switching charges it would have to absorb.

Commissioner Eastman raised a question as to whether short line railroads controlled by industries such as the copper industry and originating most of the tonnage of that industry would be able to veto any increase in rates on copper, for example. When Mr. Thom said that there were several traffic officers in the room and that perhaps they should answer the question, Commissioner Aitchison started a laugh by saying: "The traffic people have finally got into the case." R. N. Collyer, chairman of the Trunk Line Association, said he could not answer unless told whether it would be in the power of the commission to require the trunk lines to increase their factor of a joint rate. J. E. Tilford, chairman of the Southern Freight Association, said he doubted whether the originating line could prevent an increase, and E. B. Boyd, chairman of the Western Trunk Line Committee, said he saw no reason why the factor in the through rate that desired to increase it could not do so.

Henry Walters, Atlantic Coast Line Chairman, Dies

Was a leading factor in the consolidation and acquisition of properties which now comprise A. C. L. system

HENRY WALTERS, chairman of the board of the Atlantic Coast Line since 1902 and a leading factor in the development of that railway system, died on November 30 at his New York City residence at the age of 83. Mr. Walters who was for many years a leader in American railroading had been active almost to the last in connection with his extensive railway interests. Upon the completion of his education he entered railway service in 1873 in a minor position and, prior to his election to the chairmanship, served first as general manager and subsequently as first vice-president of the Atlantic Coast Line. He was also chairman of the board of the Louisville & Nashville, which is controlled by the A. C. L.



Henry Walters

It was in 1902—the year of Mr. Walter's election to the chairmanship of its board of directors—that the Atlantic Coast Line emerged as one of the leading railway systems of the South. On June 30, 1901, it operated about 1800 miles of road; during the remainder of that year it acquired the railroads of the Plant System and also purchased control of the Louisville & Nashville.

An article entitled "The Greater Atlantic Coast Line", appearing in the Railway Age of October 10, 1902, describes the remarkable development of the system as follows: "In April last the Atlantic Coast Line reported 1,790 miles of road in operation. Six months having passed; it shows by reason of the absorption of the Plant System of 2,235 miles and certain other additions, a total of 4,156 miles. The Louisville & Nashville system makes up a total of 4,827 miles, including the Louisville & Nashville proper, 3,393 miles; the Nashville, Chattanooga & St. Louis, 1,189 miles; the Atlanta, Knoxville & Northern, 231 miles, and the Birmingham Southern, 14 miles. Here is an aggregate of nearly 9,000 miles in the two systems without reckoning the Georgia, the Atlanta & West Point and the Western of Alabama, connecting the two great systems at the south, the Monon in the northwest or the Richmond-Washington in the northeast. These several collateral properties in which the Atlantic Coast Line has a voice, if not a controlling voice, add 1,285 miles to the whole and bring up the greater Atlantic Coast Line to a total of 10,268 miles. This is a large sphere of influence even for these days of great things in railway consolidations."

The contemporary Railroad Gazette, in its issue of October 3, 1902, identifies Mr. Walters as the moving spirit behind these consolidation plans. "The rise of this system to influence and power," the Gazette said "has been one of the remarkable incidents of the recent era of consolidation and re-arranging. The Atlantic Coast Line Railroad a few years ago was merely a collection of a half-a-dozen or more relatively unknown lines in Virginia and North and South Carolina, chiefly controlled by Henry Walters of Baltimore. Observing the great development of the Southern Railway and the organization of the Seaboard Air Line, Mr. Walters turned his attention to consolidating his properties under the Atlantic Coast Line Railroad Company."

Henry Walters was born at Baltimore, Md., on September 26, 1848, and received his education at Loyola College, Baltimore, Md.; Georgetown University; the Lawrence Scientific School, Harvard University, where he was graduated in 1873, and in Paris. He entered railway service in 1873, as rodman in engineering corps of the Valley Railroad in Virginia (now part of the B. & O.), and two years later he became connected with the Pittsburgh & Connellsville, now also part of the B. & O., as assistant to general superintendent. Later he entered the employ of the Atlantic Coast Line, of which his father was one of the organizers, and during the period from 1884 to 1902, he served as general manager and as vice-president of roads forming the A. C. L. In the latter year he was elected chairman of the A. C. L. board of directors and in July, 1903, he also became chairman of the board of the Louisville & Nashville, in which capacities he served until his death. Since 1877, he has also been a member of the firm of W. T. Walters & Company. From 1918 to 1920 he was a member of the staff of the U. S. Director General of Railroads representing railroad interests. Mr. Walters was also widely known as an enthusiastic art collector.

Patents and Railway Progress*

"Success in selling the railroads to the public, and success in selling to the railroads, will depend upon new and greater railroad inventions"

By Charles L. Howard

Assistant General Counsel, Western Railroad Association, Chicago

NO industry is more vitally interlocked with patents and inventions than the railroads. When we take into consideration that practically everything—from cotter pins to coaling stations—used in connection with the railroads is related to some patent, either existing or expired, we can readily see the tremendous importance that patents are to the welfare of the railroads of this country.

When we look upon the property investment of the railroads of over twenty-six billion dollars and know that the foundation of that investment is its mechanical structure, we must realize that through necessity certain portions of that structure need strengthening here, replacement there, and, more important still, new sections added at this or that point.

Nothing in the remarkable expansion of rail transportation in this or any other country equals the daring with which every invention and opportunity and urgent need was seized upon during the first few years of our railroad history. During that time steam power was first applied upon land, locomotives were designed with hardly a yardstick to follow and built in American shops, necessarily poorly equipped. Rails and roadbed had to be originated and everything developed under conditions never before confronted by mankind. Twenty-three miles of rail in 1830 to over 2,800 miles in 1840—and this in the face of poverty, prejudice, a panic and congressional investigation.

[At this point, Mr. Howard pointed out in detail what had been accomplished by railroad inventors down to 1910. He referred to the origin of the link motion for valve gear, the track sander, the reverse gear, feedwater heater, draft gear, babbitt metal, the variable exhaust, coal-burning locomotive, four-wheel truck, automatic signal, air brake, Pullman car, automatic coupler, sight-feed lubricator, superheater, mechanical stoker and many others.—EDITOR.]

Looking back upon what was accomplished up to 1910, and swiftly coming down to date—what have we? The modern high-capacity locomotive, 70-ft. cars, 152-lb. rails, air-conditioning for cars, container cars, the thermic syphon, the four-wheel trailer, the locomotive booster, improved cab fittings, train lighting, heating and ventilating, track appliances, steel car ends, doors and roofs, shop and terminal equipment, etc.

When we pause and reflect upon the great achievements accomplished during the past 100 years, we might wonder whether or not the field for railroad inventions has been exhausted and if we have reached the saturation point in railroad advancement. Does it mean that our task has been finished because the railroads have accomplished miracles in improved service? Has the problem of reducing the cost of carrying a ton per mile been solved as far as mechanical construction is concerned?

That the mechanical art of railroading has reached a very advanced stage of improvement cannot be denied. Inventors of recent times have explored vast fields of knowledge, the very existence of which was not even suspected by the pioneer railroaders. As progress in all the sciences has been made, the scope of railroad invention has been enlarged to such an extent as to possibly lead some of us to believe that all the necessities for freight services and all the luxuries for passenger service are near perfection. Therefore, the question as to how much further the inventive power of the mind may go as far as the steam railroads are concerned is an interesting one. Is there a limit to the progress of railway mechanical construction? Or will changing conditions create new eras in steam railroading along radical lines, thus necessitating more and more revolutionary steps in invention? Are we to continue the gradual and forward march of improvement that has heretofore characterized the history of our railroads? Is there still an opportunity to build new types of fences or shall we spend our time simply minding and mending the fences already built. The answers to these questions are self-evident.

Patent Protection Creates Incentive

The justification for patent protection is the recognized desirability of creating an incentive for developing new and improved methods and devices. Without the appeal to our individual selfishness in the form of material reward for our work, inventors—like everyone else—would not have the stimulant to develop new ideas. All over the world, governments recognize the benefits to civilization resulting from patented improvements. The method universally used for stimulating effort toward that end is in granting to the inventor the exclusive control of his invention for a definite period of time.

The process of development of any mechanical device is necessarily accomplished by gradual steps. Each step forward suggests another step, and it is obvious that if a patent franchise is granted by the government on every slight advance made, it would hinder rather than promote progress. Everyone would be paying tribute to everyone else. The object of the patent laws is not to reward those who simply use good judgment, but to protect those who create new ideas and express them in tangible form.

The majority of devices submitted to the association for infringement investigation are undoubtedly new and patentable, whether they come to us from railway employees, railway supply manufacturers or outside independent inventors. In fact, it may encourage you to know that a locknut came before us recently which has

* Abstract of a paper presented before the regular monthly meeting of the Western Railway Club, held November 16 at the Hotel Sherman, Chicago.

all the earmarks of novelty notwithstanding there are about 3,000 patents taken out on this sort of thing. And we have in our files copies of about 5,000 patents on pipe couplings and yet patentable couplings are still coming in.

Patents Fail for Lack of Usefulness

The story of American patent history will never be completed until someone gives us statistics telling how many patents have failed on account of lack of usefulness. The association has in its files approximately 400,000 copies of patents on devices of interest to steam railroads and about 125 are added each week. There are, for instance, about 300 copies of patents on ash pans, 2,000 on stokers, 4,800 on hand brakes, 5,200 on rail ties and 6,000 on dump cars. Yet, think how few types of ash pans, stokers, hand brakes, rail ties and dump cars are in use today.

[When filing applications for patents, Mr. Howard pointed out how necessary it was for the right party, or parties, to make oath as to inventorship. He said that if in building a machine one person does all the inventing and a second person does the constructing, the first person alone is the sole inventor. Also, if one person invents something and another person finances the application for patent through the patent office, the former is the sole inventor, and the patent, if issued jointly, is invalid. He said that if two or more persons use their inventive faculties in the mutual production of a new and useful process or machine, neither one of the persons is the sole inventor of the thing produced. They must go into the patent office as joint inventors and each one has an equal right in the invention.—Editor.]

Railroad men seem to be particularly backward in applying for patents on their inventions. Not acting promptly in filing applications for patents has caused considerable loss to these men personally and to the railroads. All the encouragement possible should be given employees by the railroads to further inventive skill. It has been a standing rule of the association for over 50 years that all employees be encouraged to suggest and make improvements. This rule has more significance today than ever before.

What I have said does not mean that we should use our time only upon patentable improvements. We may devise something very valuable which is the result of mere mechanical skill, or we may make something in one piece that is known to exist in two pieces—progress in all industries has been enhanced by non-patentable inventions. But, I wonder what strides would have been taken in any one of the great inventions—Edison's electric light; Hall's production of aluminum; Marconi's wireless telegraphy—if patent protection in the form of exclusive ownership had been lacking.

Patent Relationship between Employer and Employee

One of the questions that often comes before the association is: What right has the employer in the inventions of the employee? While each case can be definitely decided only after knowledge of the particular facts, several general rules may be pointed out by the following cases which have been considered by the association.

For instance, *A* is employed by a railroad and is hired especially to develop a certain type of end sill. After the patent has been issued on the sill, who owns the patent? The railroad owns the patent, *A* having been employed for that particular work.

Another case: *B* is employed by a railroad for general work and uses the railroad's time and property in designing a rail anchor. A patent is issued to *B* and he remains in the employment of the railroad. Has the railroad any right in the patented invention? The answer is: Yes, the railroad has a shop right which gives it the privilege of making in its own shop for its own use as many of the anchors as it finds necessary.

Again, *C* is employed by a railroad for general work and uses the railroad's time and property in the development of a splice bar, which he patents. A number of the bars are used by the railroad and then *C* leaves the employment of the road. What right has the railroad in *C's* invention? The railroad has a shop right to continue to use the splice bars already placed in service before *C's* resignation, but unless *C* has explicitly assented, or the railroad has paid all the expenses in obtaining *C's* patent, it is doubtful whether the railroad has the right to continue to make and use additional bars after *C's* retirement.

From the above three general rules, it will be seen that the law is liberally in favor of the employee, as it should be, and, at the same time, the employer is given a license or shop right under the patent in proportion to the assistance given the employee. But, in no case does the employer become the owner of the patent unless it is by express agreement.

There has been no instance as far as I know, where an employee of a railroad has lost more than a shop right in his invention, whereas employees of manufacturing concerns usually retain no rights at all in their inventions pertaining to their employer's business.

The railroads are not in the manufacturing business and, consequently, the progress of the railroads does not depend upon their ownership of patents. But, they do receive untold benefits from licenses and shop rights in inventions patented by employees.

Tribute to Railway Supply Manufacturers

To talk about patents and railroad progress without referring to the part played by the railway supply manufacturers would be omitting one of the outstanding reasons why the railroads lead in the transportation industry. The facilities of the railway supply manufacturers for developing and perfecting new inventions and their efforts in promoting these inventions has made the great progress of the railroads possible.

[Mr. Howard gave a brief resume of the law today in reference to the renewal of parts of patented inventions, infringement and validity of patents, and explained why the Western Railroad Association was organized in 1867 to give attention to the patent matters of the Western railroads.—Editor.]

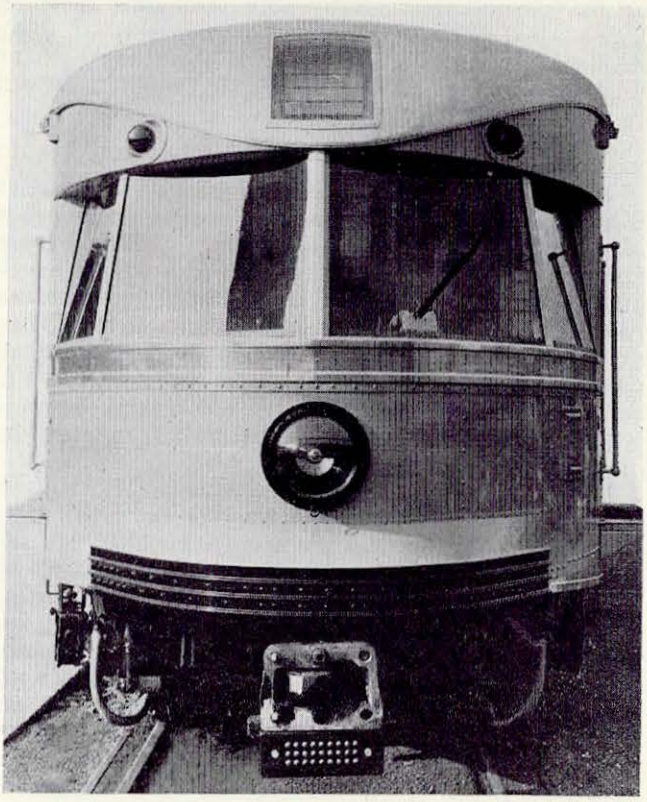
To answer all questions submitted to counsel, it has been necessary for the association to order and classify every issued patent that may be used by a railroad—about 400,000 in number—the most complete and thorough classification of railroad patents in existence. The library of the association also includes a great number of technical periodicals, books and foreign patents.

With the information I have given you regarding patents and inventions, I hope you will be encouraged to do what R. H. Aishton, president of the American Railway Association, suggested here in Chicago last June when he told us to throw off the shackles of precedent and develop new means and methods which will meet the competition which the railroads are encountering today—to pay stricter attention to new developments and to the replacements of less efficient types of cars, locomotives and applications. Mr. Aishton's words have given us real food for thought.

If we think we have reached the saturation point in railroad inventions, how about the corrosion of steel cars and underframes? How about the reduction of weight of all types of cars? Are hand brakes 100 per cent safe and perfected as to speed and power? And draft gears: Why not provide them with more capacity in the allotted space? How about larger tenders and fewer stops for filling? Feedwater heaters: Can they be simplified? Refrigerator cars: Have we gone far enough in mechanical refrigeration? In fact, is there anything in use upon the railroads today that cannot be improved upon?

The railway situation today is a challenge, not only to the railroads, but to the indispensable railway supply manufacturers. It is true that there has been an overproduction in this country—an overproduction of old ideas. But, it is just as true that there is today an under production of new ideas, and this applies to the steam railroads, in particular. We cannot rest on our laurels. We must win new ones. New inventions—revolutionary steps—are needed to turn the wheels of the railroads with more speed, with a greater degree of comfort yet with the maximum of safety.

Success in selling the railroads to the public, and success in selling to the railroads, will depend upon new and greater railroad inventions. The railroads should consider their days of real service and efficiency as just beginning. The field for invention has never been so wide nor the need so great and patent protection so liberal.



Front End of One of the New Philadelphia & Western Stream-Lined Cars

Philadelphia & Western Starts High-Speed Service

THE new terminal of the Philadelphia & Western Railway at Main and Swede streets, Norristown, Pa., was opened on November 15, and a high speed service was begun on the following day between Norristown and Sixty-Ninth street station, Philadelphia, Pa. Ten new stream-lined cars capable of operating at speeds up to 80 miles an hour are used in this service. They were built by the J. G. Brill Company and were equipped by the General Electric Company.

The cars weigh 50,000 lb., seat 52 passengers and are equipped with four 100-hp. motors. They replace cars weighing 65,000 lb. and having a maximum speed of 45 miles an hour.

Air resistance has been cut to a minimum as a result of exhaustive wind-tunnel experiments conducted under the direction of Professor Felix W. Pawlowski, professor of aerodynamics, University of Michigan. The windows are flush with the side surfaces of the cars, the underfloor equipment also being planned to reduce air resistance. The cars have a low center of gravity. The roof is relatively low and the ends of the car have a sloping roof and pointed nose. The entire car body is made of aluminum.

The substitution of fabricated gear cases for malleable iron cases, cast steel semi-fabricated frame heads for malleable iron heads, and modifications of motor frame design, resulted in a reduction of the weight per horsepower of the motor to 26.8 lb., compared with 30 to 35 lb. for the usual interurban motor. The design is such that even with high horsepower rating there is adequate clearance with car wheels 28 in. in diameter, permitting low truck height. Automatic control operation is used to insure uniform acceleration and minimum motor currents during the period of starting.

Ventilation of the motors has been improved by the use of a fan mounted on the commutator end. Cooling air is admitted from the pinion end, allowing the gear case to act as a baffle to prevent wheel wash and dirt thrown up by the wheels from entering the motor. The commutator and brush rigging are on the opposite end, further insuring a clean cooling medium for these most vulnerable portions of the motor.

It is necessary for one of the cars to run from 1¾ to 2 miles to reach its maximum speed, so that this is obtainable only on portions of the line. However, track conditions have been improved by the use of treated ties, new ballast and the increase of elevation on the outside rail on all curves. The cars have shown ability to take the curves at much higher speeds than were expected and the running time between Norristown and Sixty-Ninth street has been reduced from 24 to 16 minutes.

Wind tunnel tests show that with conventional railroad cars operating at speeds between 70 and 80 miles an hour, more than 70 per cent of the total power is consumed in overcoming air resistance. It is estimated that 20 per cent of the power required to propel the new Philadelphia & Western cars, at speeds above 60 miles an hour, is saved by the stream-lined design.

THE MISSISSIPPI VALLEY ASSOCIATION, at a meeting at St. Louis, Mo., on November 23, voted to urge Congress to authorize a federal bond issue for the rapid completion of the Inland Waterway system of the United States. Although opposition was manifested by several delegates, the proposal was passed by a large majority. The association named no amount for the bond issue but the sum needed for the completion of the system was set by several speakers at $500,000,000.

Canadian Board Favors Wage Reduction

THE Canadian Board of Conciliation which had before it a proposal of the Canadian railways for a decrease of 10 per cent in the wage rates of train and engine men, which proposal was opposed by the unions representing these employees, has handed down a majority decision favoring the view of the railways. The board was made up of three men, one representing the railways, another the employees and the third chosen impartially. The member representing the employees presented a minority report opposing the decrease.

The majority report held that, if a rise in the cost of living was an adequate basis for a wage increase—which it had been held in the past—then a declining cost of living was a valid consideration in a wage reduction proposal. The financial condition of the railways was also taken into account. Net operating revenues of the Canadian National for the first ten months of the current year are $18,296,129 less than for the same period last year and those of the Canadian Pacific $10,185,539 less. For the first nine months of the current year the return on the C. P. R.'s investment has been less than 1⅓ per cent.

Hearings were concluded by the board in Montreal last week with a presentation of the employees' case. Their representative contended that while increases in living costs may call for increases in wages, and that with decreases in actual changed standards of living, the cost of living, where shown to be permanent, may afford ground for argument in decreasing wages, nevertheless, first, employees have already suffered, in practical effect, serious decrease in earnings, and using the railroads' own measuring stick, a decrease greater than the reduction in the cost of living; and secondly, there is no evidence that the present scale of living costs is to be maintained. On the contrary, it was said, there is evidence to support the view that prices are rising.

They claimed, that previous rates of wages were insufficient to afford a decent standard of living. They were willing, however, to produce a comparison of living cost and wages on the seven-year base 1922 to 1928, inclusive, with both wages and cost of living for the seven-year period equated to 100.

Taking the base year 1928 as equal to 100, the conclusion drawn by the employees from figures given the Board was that, comparing 1930 earnings with 1931 prices, the employees are at a distinct disadvantage with respect to purchasing power.

Disposing of the "Canada First" argument of the employees used the previous day, the railways said, in presenting their final rebuttal, "the reasonable protection of investments in Canadian property is just as important in the interests of the employees as of the railways, and this is a good 'Canada First' policy." The large proportion of stock of one railway company held outside Canada was referred to by the representative of the employees on the previous day.

EIGHT RAILROADS SERVING ST. LOUIS have arranged to keep their freight stations open until 6 p.m., six days a week. The stations heretofore closed at 5 p.m .on Monday-Friday, and 3 p.m. on Saturdays. The railroads include the Missouri Pacific, Chicago & Eastern Illinois, St. Louis-San Francisco, St. Louis Southwestern, Missouri-Kansas-Texas, Chicago Burlington & Quincy, Chicago, Rock Island & Pacific and Wabash.

Communications . . .

A Switchman's Views on Wage Reductions and Co-operation

MOLINE, ILL.

TO THE EDITOR:

It was with keen interest that I read *Railway Age's* editorial "Will Wages Be Reduced by Agreement?" The stockholders, executives and employees have wasted valuable time and failed miserably during the past year by not uniting to protect each other's interests. They have failed to understand that other interests are slowly but surely reducing their incomes and they have been maneuvered into a position whereby they must unite for each other's protection or the future will hold for them nothing but deterioration.

The railway stockholders are the most helpless of the three as they have very little to say about their wages being reduced and are in a hopelessly disorganized state. They should be organized and have a voice in the formation of the railway's policies.

Executives should select a powerful man to represent all railway presidents, and he should be a man who has the courage to fight; too many executives cannot see beyond the ends of their own rails; they seem to think that their own railway is a kingdom unto itself and they are not interested in the welfare of any other railway.

The railway unions likewise should bring forth a man to represent all railway employees and he should be a man who has the confidence of all.

The above named groups should form a committee of three and develop a national railway policy; they should be broad-minded enough to work for the betterment of the entire industry and not the individual group they represent. It has been the absence of unity upon the part of stockholders, executives and employees that has placed the railways in the desperate position they are in today. They must unite and face their problems with a solid front or else find themselves slipping down the other side of the hill.

I disagree with the theory that a reduction of railway employees' wages will increase employment. However, if the railways need money and the only way they can secure it is by a reduction in wages, I suggest that their employees help them, through a temporary reduction in wages. Please bear in mind when I make this suggestion that I am a railway employee, a switchman and a member of organized labor.

If a reduction of wages is of vital importance to the railways and is an absolute necessity, let the reduction be made by agreement; it should be of a temporary nature and for six months only; at the expiration of the six months period if business is still in a bad way, another meeting should be held and the reduction kept in effect for another six months.

The wage question should not be allowed to go through the various channels and to an arbitration board at the present time. It is too slow a process and too expensive. From an employee viewpoint a reduction in wages made by an arbitration board takes too many years to get back. The railways should avoid an arbitration board because of the stand taken by the President of the United States on wage reductions. As he appoints the final board, I am confident he would instruct it to vote against a reduction, especially at the present time, as next year will be a campaign year.

There should be unity from now on in the railway industry as we have been brought face to face with the facts that certain groups are working toward government ownership and we have on our own hands an Interstate Commerce Commission that does not intend to help us—in fact I believe it is developing a hostile attitude.

Everyone connected with the railway industry should plainly see that from now on the railways must stand alone and fight and expect help from no one except each of us who are a part of it. Each of us have brains, are aggressive and have political power and we must unite.

DANA MAVITY.

Odds and Ends . . .

Pay-Check Collector

Thirteen hundred dollars worth of uncashed Great Northern checks, some of which had worn in two and had been pasted together again, were found in a cabin home of a retired track walker following his death at Essex, Mont.

It May Keep Them Awake at Night

Coffee of an inferior grade, compressed into bricks, will be tried out as fuel on the locomotives of the government-owned Central Railroad of Brazil. Brazil is having a hard time disposing of low-grade stocks of coffee and the Minister of Public Works has authorized its use in locomotives in order to avoid having to dump the surplus into the ocean.

Pay Dirt at Germantown

An avid search for lost coins began when workmen started to tear up the 50-year old platform of the Reading's Germantown, Pa., station, which is being rebuilt in connection with the electrification of the line. Some 50 men and boys, equipped with shovels, scoops and miscellaneous garden tools, went eagerly at the task of "panning" the dirt beneath the old platform in search of coins dropped by commuters. When it began to rain, the "prospectors" donned slickers, and when night came, they worked by the light of lanterns. One searcher said he had found $14 and many picked up from $2 to $5. One boy is said to have found a coin minted in 1812.

A Letter of Complaint

Editors, like railway officers, occasionally receive some curious letters of complaint. The following is an actual copy of a letter received at this office from an indignant correspondent:

"I wrote to you about three weeks ago an essay in three parts in one article an article on firstly 'Music and the Railways,' and secondly on 'Electrification of British Railways,' and thirdly 'Compressed Air versus Electricity in Railway Traction and Railway Traction and Tramways,' and am surprised I never heard a word from you ever since acknowledging the receipt of same. Of course, if it was a matter of being lost in the mail or mislaid or stolen en route, then, of course, I'd be satisfied and would offer an apology for same, but then I never lost anything in that way yet, and in the nature of things I suppose it came to you all right.

"Now I spent considerable time, thought and labour and several sheets of foolscap paper in writing a most intensely romantic and unusual treatise, advocating the use of compressed air in railway traction instead of that hackneyed, disgusting and much vaunted stunt of the electric craze that is getting positively nauseating and tiresome.

"An article that for originality, beauty and unusuability you would not meet the likes of which once in seven years, or perhaps in a lifetime, and to say you never even answered me through sodden laziness after all my trouble and labour much less to publish it, seems aggravating to extreme.

"Send this article back to me at once, I say. Send this paper back to me, do you hear! And all I regret is to cast such a pearl to swine that they can utilize it to their own advantage, that they never could write the likes of and use it to their own advantages.

"Send this paper back to me at once; if it was a thing nonsensical or frivolous, there would be some excuse in ignoring it, but to say that all my trouble in exposing this electric stunt you ignore me altogether. It is too much; send this back to me."

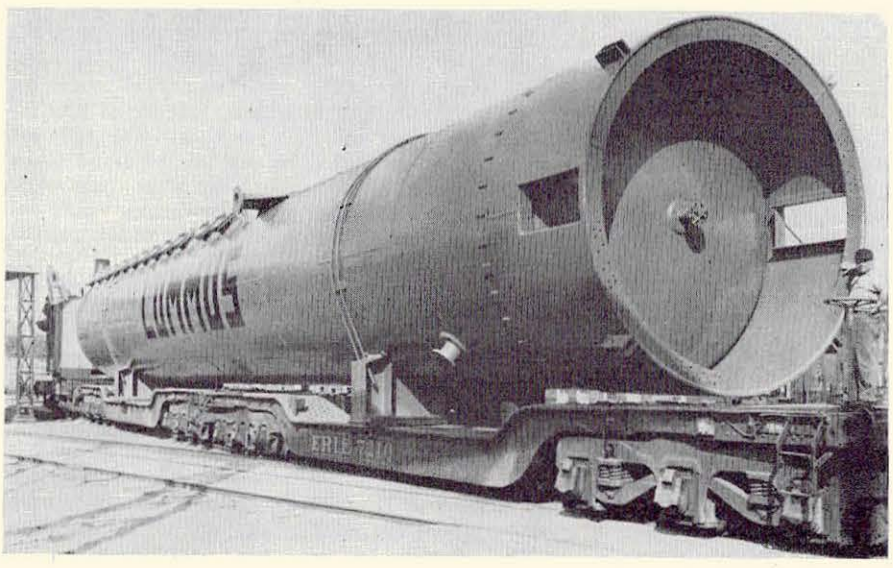
(A letter has since been received from this correspondent acknowledging the receipt of our reply to his previous letter, and apologizing for his complaint.)—From the Railway Gazette (London).

Solving the "Return Load" Problem for Long Distance Trucks

Rock Island employees at Herington, Kans., are meeting with splendid co-operation from local merchants in promoting shipments by rail rather than by highway. A local furniture dealer recently ordered three suites of furniture from a St. Louis concern, asking that they be shipped by rail. The shipment arrived by truck, manned by two gentlemen of color. The dealer refused the shipment and the truck returned to St. Louis, some 400 miles away, without any worry on anybody's part about getting a "return load" for it—a simple solution for one of the most troublesome problems of efficient truck operation.

Heavy Traffic on the Erie

What is said to be the largest and heaviest column ever shipped in a single piece by rail was recently moved by the Erie from Barberton, Ohio, to New York on two Erie "well" cars. The shipment was a "bubble tower" used in the manufacture of gasoline. The tower is 93 feet long, 12 feet in diameter, and weighs 325,000 lb., and is, in effect, a single piece of steel. Despite the unusual nature of the shipment and the difficult handling problems presented, the 600-mile trip was made without mishap.



How the Erie Moves Unusual Shipments

NEWS

Reading Announces Improvement Program

Will spend $4,000,000 on additional electrification, construction and new equipment

Immediate extension of electric passenger service from Philadelphia, Pa., to Norristown; construction of a new coal pier; purchase of new multiple unit cars, and continued conversion of existing equipment, at a total cost of more than $4,000,000, were the major items in an extensive improvement program announced on November 30 by the Reading Company, through Agnew T. Dice, president. Mr. Dice's official statement follows:

"The management of the Reading Company believes this to be the opportune time to place large contracts as a stimulus to industry and to provide employment when so urgently needed. The board of directors has authorized immediate extension of the suburban electrification program of the company from Philadelphia to Norristown, the construction of 30 multiple unit electric passenger coaches, 20 passenger coach trailers, the erection of a new pier at Port Richmond and extensive locomotive rebuilding at Reading, Pa.

"The placing of these contracts involving many millions of dollars will insure work to several thousand men during the winter months."

Mr. Dice, in elaborating the foregoing statement, announced that the directors had authorized an expenditure of $1,500,000 to extend the electrified zone from Sixteenth Street junction, above Reading Terminal (Philadelphia), to Norristown. This contract is the first step beyond the original $21,500,000 electrification program of the company, all of which is now completed with the exception of the Chestnut Hill branch. Construction work will be started early in 1932, with the placing of concrete foundations for the catenary and transmission supporting structures. Immediately following this the steel structures will be erected and the wiring and substation work will follow. It is expected that the electric service on the Norristown branch will be inaugurated in the early part of 1933, at which time the electrification of the Chestnut Hill branch is also expected to be completed.

With the completion of the electrification of the Norristown and Chestnut Hill branches, the Reading will provide electric service on 95 per cent of the suburban trains operated by it in the Philadelphia area. At present 135 electric trains are operated daily, and with the completion of the two programs this total will be increased to 255. The authorization of the Norristown branch electrification provides for electric operation over 17.5 route miles and 35 track miles, making a total, authorized and in operation, of 203 miles of electrified track covering 86.9 route miles.

To provide for the additional service, orders are to be placed for the construction of 30 multiple unit electric passenger coaches, at a cost of $1,500,000, while 20 additional passenger coach trailers are to be provided by the conversion of steam passenger coaches, at a cost of $400,000. These latter cars are to be rebuilt to the models now in electric service in all details with the exception of motors, and will be utilized to increase the passenger-carrying capacity of suburban trains. Coming at a time when passenger coach and electric equipment construction has been at a standstill, the Reading contracts will insure work for large forces through the entire winter.

At Port Richmond, on the Delaware river, a new pier, for use as an auxiliary coaling dock, is to be built to replace pier No. 11, which was burned. This work will be completed at a cost of $150,000.

The company also plans to continue its policy of converting compound Mallet locomotives into simple locomotives at its Reading shops, and the superintendent of the shops has already been notified that this work may continue throughout the winter.

Equipment Installed

The railroads of the United States in the first ten months of 1931 placed 11,891 freight cars in service, according to reports to the Car Service Division of the American Railway Association. In the same period last year, 73,887 new freight cars were placed in service, and two years ago 68,073. Of the new cars put in service this year, 3,742 were box cars, 4,972 coal cars, 383 flat, 2,701 refrigerator, 82 stock and 11 miscellaneous cars.

The railroads on November 1 had 4,610 new freight cars on order, compared with 5,781 cars on the same day last year and 33,642 on the same day two years ago.

The railroads also placed in service in the first ten months this year 114 new locomotives compared with 694 in the same period in 1930 and 612 in the same period in 1929. New locomotives on order on November 1 totaled nineteen, compared with 139 on the same day last year.

St. Louis Shippers Ask Changes in Rate Laws

Would give railroads and industry greater leeway in meeting all competition

Shippers and carriers alike "are becoming less and less able to engage in commerce requiring long hauls," says W. E. Rosenbaum, chairman of the legislative committee of the St. Louis Shippers' Conference Association, in a recent letter transmitting copies of a resolution of the Association, calling for changes in the Interstate Commerce Act, to ranking members of the Senate committee on interstate commerce and the House Committee on interstate and foreign commerce. The resolution advocates repeal of that portion of the Hoch-Smith resolution which directs the commission to make a thorough investigation of the rate structure and also suggests amendments to sections 3 and 4 of the Transportation Act.

The underlying purposes of these proposals as set forth in the letter are: "(1) To give the railroads greater freedom or leeway in meeting competitive conditions of various kinds, i.e., not only with other means of transport, but as between commodities, communities and industries as well; (2) to restore as fully as possible the previously long-existing competitive basis of rate making upon which the great commerce and industry of this nation have been so successfully established, and which was designed to fit the competitive needs of shippers and carriers alike; (3) to eliminate to as great an extent as possible, the mileage basis of making freight rates, which is now largely in vogue, and which makes distance the controlling factor in the establishment of freight rates thereby ignoring, more or less, the competitive needs of shippers and carriers and resulting in the localization of industry at large population and consuming centers; (4) to restore to industry the ability to engage in long-distance competition and by reason thereof, enable rail carriers to engage in a greater volume of long-haul transportation than they now are able under present conditions."

The resolution is in the main an attack upon mileage rates and the suggested changes in legislation are designed to eliminate those provisions of regulatory laws which, the Association claims, are tending to foster the extension of the mileage principle in rate making.

(Continued on page 880)

Railroad Net for Ten Months 2.05 Per Cent

Same period in 1930 yielded 3.43 per cent—October return only 1.87 per cent

Class I railroads for the first 10 months of 1931 had a net railway operating income of $472,306,294, which was at the annual rate of return of 2.05 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the first 10 months of 1930, their net was $773,287,277, or 3.43 per cent.

Operating revenues for the 10 months totaled $3,642,511,936, compared with $4,566,859,903 for the same period in 1930, a decrease of 20.2 per cent. Operating expenses amounted to $2,785,789,811, compared with $3,379,309,145 for the same period one year ago, or a decrease of 17.6 per cent. The railroads in the 10 months paid $272,340,433 in taxes, compared with $307,713,258 for the same period in 1930, or a decrease of 11.5 per cent. For October alone, the tax bill of the Class I railroads amounted to $26,443,574, a decrease of $5,785,872 under October the previous year.

Thirty-five Class I railroads operated at a loss in the first 10 months of 1931, of which 12 were in the Eastern district, 7 in the Southern and 16 in the Western.

For October the roads had a net railway operating income of $64,020,077, which, for that month, was at the annual rate of return of 1.87 per cent. In October, 1930, their net was $112,386,243, or 3.35 per cent. Operating revenues for October amounted to $363,205,648, compared with $483,526,815 in October, 1930, a decrease of 24.9 per cent. Operating expenses in October totaled $261,246,920, compared with $326,336,270 for the same month in 1930, a decrease of 19.9 per cent.

Class I railroads in the Eastern district for the 10 months had a net of $245,045,596, at the rate of 2.30 per cent. For the same period in 1930, their net was $397,007,722, or 3.83 per cent. Operating revenues in the Eastern district for 10 months totaled $1,822,212,014, a decrease of 19.9 per cent below the corresponding period the year before, while operating expenses totaled $1,392,661,964, a decrease of 17.2 per cent. For October the net was $30,657,004, compared with $48,120,080 in October, 1930.

In the Southern district for the 10 months the net was $37,672,116, or 1.34 per cent. For the same period in 1930, the net was $73,522,268, or 2.63 per cent. Operating revenues for the 10 months amounted to $443,849,183, a decrease of 18.8 per cent under the same period in 1930, while operating expenses totaled $364,250,262, a decrease of 15.1 per cent. Class I railroads in the Southern district for October had a net of $3,787,861, compared with $10,167,652 in October, 1930.

Class I railroads in the Western district for 10 months had a net of $189,588,582, at the rate of 1.99 per cent. For the same 10 months in 1930, they had a net of $302,757,287, at the rate of 3.21 per cent. Operating revenues in the Western district for 10 months amounted to $1,376,450,739, a decrease of 21.1 per cent under the same period in 1930, while operating expenses totaled $1,028,877,585, a decrease of 18.9 per cent. For October, the net of the Class I railroads in the western district amounted to $29,575,212. The net in October, 1930, totaled $54,098,511.

CLASS I RAILROADS—UNITED STATES

	1931	1930
Month of October		
Total operating revenues	$363,205,648	$483,526,815
Total operating expenses	261,246,920	326,336,270
Taxes	26,443,574	32,229,446
Net railway operating income	64,020,077	112,386,243
Operating ratio—per cent	71.93	67.49
Rate of return on property investment	1.87%	3.35%
Ten months ended October 31		
Total operating revenues	$3,642,511,936	$4,566,859,903
Total operating expenses	2,785,789,811	3,379,309,145
Taxes	272,340,433	307,713,258
Net railway operating income	472,306,294	773,287,277
Operating ratio—per cent	76.48	74.00
Rate of return on property investment	2.05%	3.43%

Running-Board Tests Extended Six Months

The Interstate Commerce Commission has extended from January 1 to June 30, 1932, the time allowed in its order of January 29, 1930, to permit certain railroads to continue tests with running boards, on box or other house cars, made of material other than wood. This order modified the provisions of the safety appliance order of March 13, 1911.

Retroactive Increase of Rate Division Held Invalid

Affirming the decree of the federal district court for the district of New Jersey, the Supreme Court of the United States on November 30 held invalid an order of the Interstate Commerce Commission in which it had attempted retroactively to increase the division received by the Hoboken Manufacturers' Railroad out of the through rate of $9 per 100 lb. on silk from the Pacific Coast to New York from 5.25 cents to 22 cents. In 1927 the commission ordered the increase, effective as of August 6, 1926, the date of the filing of the complaint, but in February, 1928, the Supreme Court held that where joint rates had been established by the parties (and not by order of the commission) the statute conferred no powers to require adjustment for any period prior to final order. The commission then issued a second order directing adjustment as of a date 30 days after the date of its first order, but the trunk line railroads declined to obey the order and the commission on February 4, 1930, issued another order, effective on March 10, but stating it was not to be construed as modifying the order of November 5, 1927. The court held that both orders undertook retrospectively to change the existing agreed rate. No question was raised as to the third order. Justices Stone, Holmes and Brandeis dissented.

N. Y. Board Criticizes Class Rate Decision

Also lectures railways in order permitting adjustment of intra-state schedules

Asserting that it entertains no doubt but that the railroads will lose business as a result of the new class rates but according them an opportunity to ascertain by actual experience the effect of such proposals, "however dangerous such an experiment may be," the Public Service Commission of New York, in a recent decision, permitted carriers serving that state to adjust intra-state rates in accordance with interstate schedules approved by the Interstate Commerce Commission in the Eastern Class Rate case.

The New York decision, in addition to its discussion of rates also, includes criticisms of the I. C. C. findings and of railway managements. In connection with the latter it concedes the financial difficulties of the carriers but adds that "there has seemed to be a lack of courage and foresight in dealing with the change which has come about in transportation methods as a result of the invention and development of the internal combustion engine."

"The railroads," the report continues, "have been slow to meet the new competition and to appreciate that transportation by truck and automobile offers a service which is in many instances more convenient and attractive even if it were not less expensive. In many instances, railroad officials have appeared to close their eyes to this competition and have refused to depart from mere railroading, apparently casting their lot for success or failure with a method of transportation which has been in operation for some three generations."

Speaking of the interstate rates prescribed by the I. C. C., the New York Commission finds that the territory over which they are applicable "contains portions which vary widely as to topography, density of population and transportation, commercial and industrial conditions. . . . The only ground upon which the determination of the Interstate Commerce Commission can be defended or explained is that the rates are intended to reflect average conditions for interstate traffic throughout the entire territory.

"The inevitable effect of the application of a basic mileage scale such as prescribed by the Interstate Commerce Commission is to deprive certain areas of their geographical and topographical advantages by giving the same rates to other areas not so favorably situated and which could not possibly obtain the same rates if the rates were based on the cost of the service and not on arbitrary averages. In other words, states like New York were offset against and made to bear the burden of states where traffic is light or operating costs high in order to produce an average for the whole."

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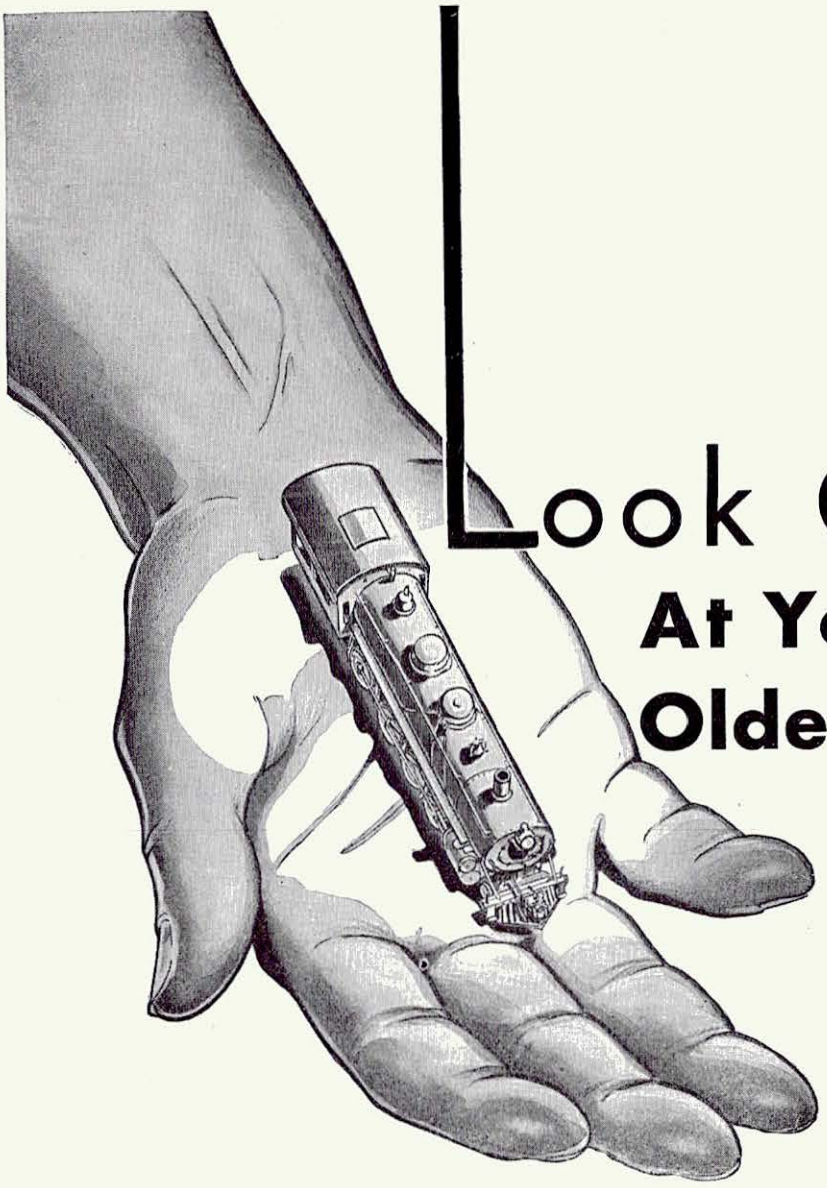


Look Critically At Your Older Locomotives

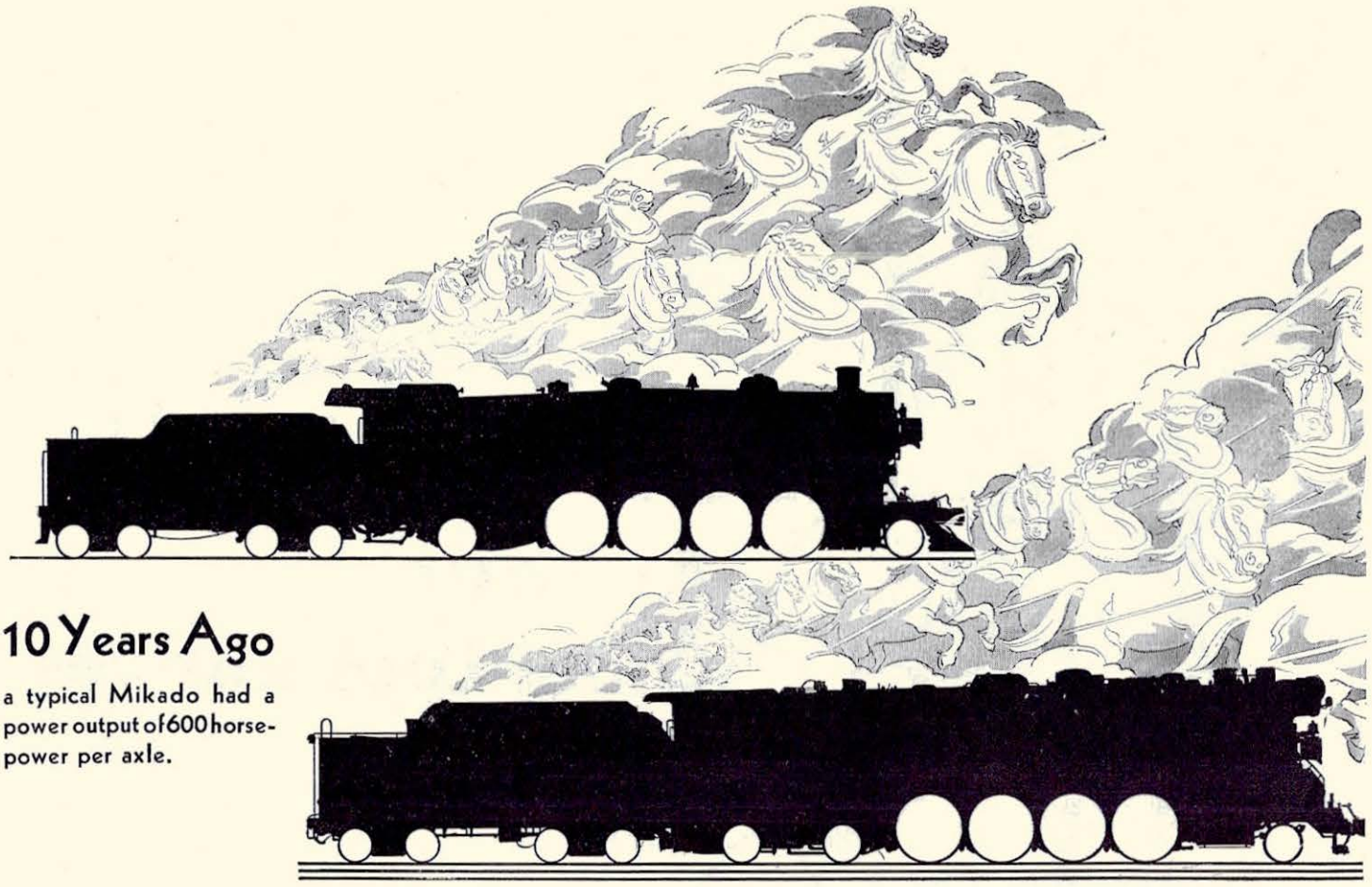
COURAGE in retiring obsolete equipment is one of the qualities required of progressive management.

Many a 10 year old locomotive has lost its usefulness because new designs embody more profit-making possibilities.

The older locomotives may be in good mechanical condition; they may be only a few years old. But, if they fail to measure up to the performance of the modern Super-Power Locomotive, they are money wasters, exacting a continuing excess charge on the production of transportation—**they are obsolete.**

LIMA LOCOMOTIVE WORKS INCORPORATED

LIMA LOCOMOTIVE WORKS • Incorporated • LIMA • OHIO

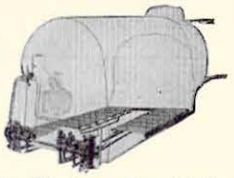


10 Years Ago

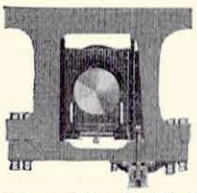
a typical Mikado had a power output of 600 horsepower per axle.

TODAY, the modern locomotive develops 1,000 horsepower per axle,

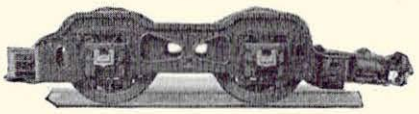
Franklin Power Reverse Gear



Franklin Steam Grate Shaker



Adjustable Driving Box Wedge

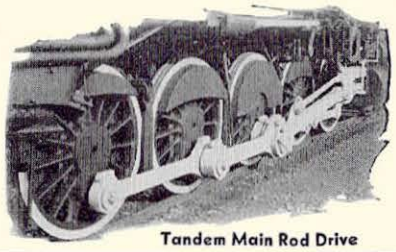


The Locomotive Booster

THE FRANKLIN SLEEVE JOINT

Close coupling reduces overhang and wear and overcomes the tendency for connection to unscrew

The LIMITED Cut-off



Tandem Main Rod Drive

Driving Box Lubricator and Spreader

FRANKLIN
MADE IT POSSIBLE

to step up locomotive horsepower

resulting in greater economy and improved operation.

In this intensifying of power output, Franklin has had an important part.

For free steaming on long runs, a clean fire admitting air thru the grates is a necessity. Franklin Steam Grate Shaker makes it physically easy for the fireman to keep the fire in better condition to produce more steam.

Draw bar pull at any speed is dependent upon cut-off. Franklin Power Reverse Gears make it easy for the engineer to secure and to retain just the right cut-off and thus conserve steam. These gears won't creep and are made for either wheel or lever operation.

While steaming capacity controls operation at speeds, starting power limits the size of train that can be hauled. The Locomotive Booster raises this limit by cutting in with thousands of pounds of tractive effort in starting, at slow speeds, and in any tight place.

Another important capacity increaser is The Limited Cut-Off which compels the expansive use of steam at all times, thereby reducing steam consumption from 10 to 30%. It also reduces the maximum variation in torque which permits using a lower factor of adhesion and secures more power in starting. By giving 25 to 50% increased port opening, The Limited Cut-Off also increases power at speeds.

For transmitting the greater piston thrusts of the Super-Power locomotives the Tandem Main Rod Drive was developed. By distributing the thrust over four main pins, it keeps bearing pressures low, reduces maintenance and increases dependability of operation.

The Franklin Adjustable Driving Box Wedge automatically adjusts itself with every turn of the wheel and protects the locomotive's foundation. This is a requirement for lower maintenance and increased service.

Franklin Driving Box Lubricator and Spreader insures cool driving boxes, however fast or far the locomotive runs. Recent improvements simplify re-packing and make parts interchangeable.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

New York - Chicago - San Francisco - St. Louis - Montreal.

Western Grain Case Before Supreme Court

Commission's brief denies basing of lower rates on Hoch-Smith resolution

Argument was to be heard by the Supreme Court of the United States this week on the appeal taken by the western railroads from the decision of the federal court at Chicago which refused their application for an injunction against the order of the Interstate Commerce Commission making a general downward revision of grain rates in the western district. An important feature of the case is the possibility of eliciting from the court an interpretation of Section 15a of the interstate commerce act. Briefs have been filed both by the railroads and by the commission.

Whereas the railroads had argued in their brief that the commission's report disclosed that its readjustment of the grain rates had been based on the same erroneous interpretation of the Hoch-Smith resolution which the court had condemned in the California citrus fruit case, the commission's brief was devoted mainly to denying that statement and to reiterating the brief statement it had inserted into the grain case report that its determinations had been reached under the provisions of the interstate commerce act. The court decision as to the Hoch-Smith resolution came out shortly before the commission issued its report in the grain case, which had been conducted under the Hoch-Smith resolution, and railroad men have always contended that the commission merely changed the language of its report then under consideration, without changing the rates, and transferred its discussion of the economic condition of the farmer to an appendix. The commission's brief does not attempt to cover that piece of information but attempts to show that its order was based on consideration of the facts supposed to be taken into consideration in determining reasonable rates under Section 1. In denying that it had attempted to treat agricultural products as a favored class by giving them the lowest possible lawful rate the brief says: "In arriving at a reasonable rate there are many factors to be considered and much evidence thereon to be weighed, but when the commission reaches its determination as to what is the reasonable rate, that and none other is the reasonable rate."

The brief also takes the position that the commission did not ignore the provisions in Section 15a relating to a fair return but that it did take them into consideration as indicated by the fact that the general increases in coarse grain rates, the increases in some wheat rates, and the elimination of transit balances outbound from primary markets are designed to increase revenues. The railroads' estimate that the reductions in grain rates will amount to $20,000,000 a year is denied and reference is made to an estimate of one of the commissioners that the terminal cost involved in transit stops, which the decision was intended to reduce, amounted to $30,000,000 a year. The point is also made that at the time of the hearings in the case at least nine of the important wheat-carrying roads were earning in excess of 5¾ per cent but that ten roads operating in the territory where coarse grains predominate were receiving considerably less than the fair return and would be helped by the requirement that coarse grains should be put on the wheat rate basis.

As to the railroad contention that the commission should not have reduced rates on so important an item of traffic as the grain rates when the roads were earning less than 5¾ per cent without a specific finding that the rates were so high as to cast an undue burden on the grain traffic as contrasted with other traffic, under a rate structure sufficient to yield a fair rate of return out of all traffic, the brief says:

"But Section 15a makes no requirement of such precise finding, for as recognized by appellants the commission's duties thereunder are to be performed in the exercise of its power to prescribe just and reasonable rates. Appellants urge that the relating of rates to other rates at a time when the carriers are shown not to be earning the return to which they are entitled, could not result in rates which would yield on a particular traffic its proper proportion of the return to which the carriers are entitled. This assumes that the rates were fixed by mere relation to other rates, whereas cost studies and many other factors are shown to have entered into the determination even on the face of the report. In the absence of any allegation that the order was unsupported by evidence, and in the absence of the record, it follows that the order must be taken as supported by the evidence."

Club Meetings

The New England Railroad Club will hold its next meeting at the Copley Plaza Hotel, Boston, on Tuesday evening, December 8. William F. Garcelon, chairman of the New England Shippers' Advisory Board will address the meeting on "What the Man on the Street Says and Knows About Railroads."

The Canadian Railway Club will hold its next meeting on Monday evening, December 14, at the Windsor Hotel, Montreal. A. M. Candy, general engineer, Westinghouse Electric & Manufacturing Company, will present a paper on modern practice in arc welding; the address to be illustrated by lantern slides.

The Central Railway Club of Buffalo will hold its next meeting on Thursday evening, December 10th, at the Hotel Statler. Charles E. Olp, superintendent of the New York Central at Syracuse, will speak on Modern Railroad Yard Operation. Motion pictures will be furnished by the General Railway Signal Company.

The Car Foremen's Association of Chicago will hold its next meeting on Monday evening, December 14th, at the Auditorium Hotel, Chicago. C. D. Morris, assistant to chairman, Western Railway Committee on Public Relations, will speak on Car Departments and Public Relations.

Motorist Has Common Cause with Railroads

Private automobilist probably discriminated against, says T. F. Joyce

That private motorists are probably discriminated against in highway costs and the average taxpayer who does not own an automobile is probably contributing more than he should, while both motorist and pedestrian are subject to a growing inconvenience by motor trucks and truck-trailers hauling cargo traffic on the public highways, is stated in a recent article in the Harvard Business School Alumni Bulletin by T. F. Joyce, assistant vice-president, Boston & Maine.

The need of a comprehensive study to develop the facts as to these and other phases of public costs and public inconvenience on the highways is urged in the public interest. "Diversion to the public highways of this freight haulage, from the rail systems which were built and are being maintained to handle such traffic, presents a problem which we believe is quite as much the public's in relieving the conditions of public cost and public inconvenience as it is a problem of the railroads to stop the loss of traffic and of revenues."

As to costs, the article says that in the four New England states served by the Boston & Maine expenditures for highways, streets and motor vehicle departments in 1929 were "double the amount of all revenues from motor vehicles; a fact which tends to establish that in these New England states, at least, it is the public at large rather than the actual highway users who principally pay for the highways." Highway expenses of $93,782,191 and revenues of all kinds from motor vehicle users aggregating $45,408,758 are shown in a table presented to support the statement.

In considering the growing inconvenience to pleasure motorists, the article brings out facts said to be "startling in themselves and in their implications." While motor trucks in 1930 increased 101,085 over 1929, passenger automobiles decreased 78,789, "showing not only a great and increasing amount of truck transport on the public highways but an increasing number of trucks relative to the number of private automobiles . . . There is now a truck on the highways for every seven automobiles. Motor trucks in 1930 increased to a total of 3,480,899, a figure at which they outnumbered by 1,189,452 all the freight cars (2,291,047) on all our railroads. This represents 1½ motor trucks for every freight car on every railroad in the country.

"It has been contended that the motor truck 'pays its way.'" Mr. Joyce continues. "Of the highway users, the private motorist pays far more proportionately under the present gasoline tax than do the operators of motor trucks. On a ton-mileage basis, simple arithmetic makes it clear that in proportion to his

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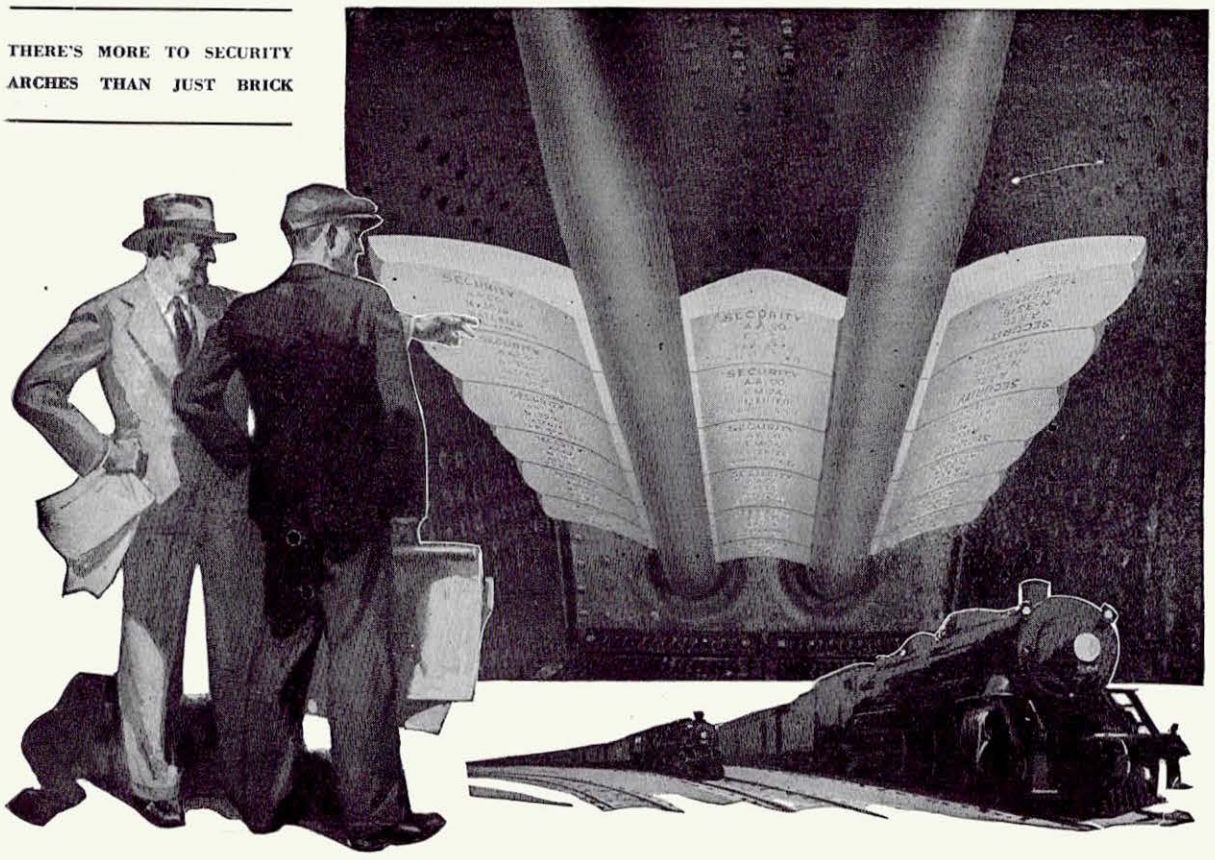
THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK



Improved Operation Is Working Arches Intensively

WHERE locomotives once plugged along at 15 miles per hour they now speed at 50.

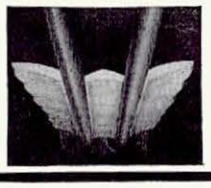
Where 100 miles was one time a division and the end of a day, the locomotive makes 500 miles and then turns around and runs back.

These operating improvements are fine for railroad economy but they are tough on the locomotive arch.

Today the Arch makes its mileage in much shorter time than it did a few years ago, and under far more severe conditions.

Everything considered, Arch Brick render better service today than they ever did—a tribute to the constant efforts of the American Arch Company in developing the locomotive Arch.

HARBISON-WALKER REFRACTORIES CO.
Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion Specialists

use of the roads the truck operator pays only 40 per cent as much as the owner of a Ford car . . . In each of our New England states, the motor truck for hire pays no more in fees or taxes than does the truck of the farmer or the business man. The hauler for hire in effect thus enjoys a 'place of business' without paying for it (or, to put it another way enjoys it at public expense), constituting a sort of 'squatter soverignity.' "

So-called "for-hire" trucks appear to use the highways four times as much as owner operated trucks, it was shown by a recent Federal study, the article adds, quoting the results of the study which showed also that the 180,000 motor trucks which were checked constituted 16 per cent of the total volume of traffic on the highways.

"Inconsistencies and consequent discrimination," are quoted from figures prepared by the National Automobile Chamber of Commerce on the taxes paid on motor trucks in each state. "The average of $58 for the New England states compares with the average of $271.95 for all the states. The rates for . . . five of the six New England states are among the 13 very lowest. . . . It would appear clear again that the public at large, and the private motorist in New England, alike are paying too large a share of highway costs.

"The subject is admittedly one which is still developing. The Boston & Maine has no disposition to interfere with the proper development of any transport agency that the public desires. We are sincere in this statement. We are using many trucks in our subsidiary service, and we shall be using many more before we are using any less.

"With the pressing need for tax reduction, federal, state and local; with the inconvenience to private motorists on congested highways caused by large trucks and by large trailers—constituting highway trains; with the plight of the railroads growing out of the continuing and disturbing loss of rail business, and the consequent weakening of the railroads, the lessened basis for railroad tax contributions and lessened railroad employment; with the figures already given on the tremendous increase in truck traffic, with all these things in mind, it is pertinent to consider where the diversion of more and more cargo traffic from the rails to the highways will lead. It seems to be unquestioned that it will be only a short time before the increasing volume of truck traffic must cause the construction of entirely new highways, with heavier construction of some present highways and extra widths of other highways . . .

"We do not ask the public to accept our statements here as final any more than we feel we should accept as final the statements on any other side of the problem. The basic facts need study and determination. . .

"There has been no comprehensive study of the revolutionary conditions which have developed since 'horse and wagon' days, and we believe the private automobilist has common cause with the railroad in obtaining a fair consideration of the various phases of the problem involved."

Postponement of Canned Goods Rates Asked

The Southern Freight association and a number of shippers of canned goods in the South have asked the Interstate Commerce Commission to postpone from January 4 to April 1 the effective date of a proposed revision of rates on canned goods in, to, and from the southern district, as to which the commission withdrew its suspension in a report dated November 3. The roads proposed to cancel commodity rates and to substitute rates based on 35 per cent of the first class rates. The shippers said that this included so many drastic increases that it would require many of them to resort to other means of transportation.

Trains Combined for Economy

The Columbine, which operates over the Chicago & North Western and the Union Pacific between Chicago and Denver, and the Gold Coast Limited, which operates over the North Western, the Union Pacific and the Southern Pacific between Chicago and San Francisco, are now being operated as one train between Chicago and North Platte, Neb. as a measure of economy. The unified train now leaves Chicago at 10:30 a.m. and is operated to North Platte. From that point on the cars are operated as two trains, the Columbine arriving in Denver and the Gold Coast Limited in San Francisco at the same times as formerly, 1:10 p.m. the next day and 8:10 a.m. the third day, respectively. Previously the Columbine left Chicago at 10:30 a.m. and the Gold Coast Limited at 2:30 p.m. Returning, the trains are combined at North Platte and operated as one train to Chicago where it arrives at 7:45 p.m., the former arrival time of the Columbine. Formerly the Gold Coast Limited arrived in Chicago at 4:30 p.m.

Colby Advocates Less Regulation and Withdrawal of Subsidies

"Government railroad regulation has grown so cumbersome as to threaten the collapse of the nation's chief lines of transportation," Bainbridge Colby, former Secretary of State, told the Rochester (N. Y.) Bar Association at its annual dinner on December 1.

"It is clearly the government's duty to withdraw all subsidies from every means of transportation, prohibit unfair discrimination by any of them, and, at least for the period of the crisis through which we are passing, withdraw all other regulations from the railroads," he continued. "The government has shown that it cannot help the railroads. Let them at least try to help themselves."

Mr. Colby's address in part follows.

"Railroad securities ought to be the most trustworthy and stable investment available to the public. . . . . But as the result of harassment by excessive, unintelligent and conflicting regulation, railroad stocks and bonds have become highly speculative and dangerous for the employment of an investor's savings.

"No matter how wedded one may be to regulation in theory, any realist knows that facts in the long run will over-ride theory. And regulation, as applied to railroads, ... has today grown so cumberous, so extended and so involved, that the Interstate Commerce Commission itself cannot reduce it to rhyme or reason, while the railroads lie prostrate and comatose under rulings and decisions which the commission cannot explain and the railroads cannot understand.

"The protection, theoretically afforded by the Interstate Commerce Commission, is no longer felt or valued.

"Commission regulation is the principal reason that the railways are now in so much worse condition than other major industries. Commission regulation is believed by many to have broken down.

"The competitive nature of the railroads' business guarantees that it will not be without salutary restraints, and it may provide a regulation vastly superior to the discredited regulation by commission, which has brought the railways of the country to the present deplorable position.

"Do not understand me as suggesting that all regulation should be lifted from the railroads. This is not practicable nor is it desirable. It would, however, be reasonable to remove a great part of the regulatory burden now resting on the railways, limiting it to a supervision of accounts, control over finance, safety regulations and discriminatory practices.

"Other forms of transportation should be subjected to similar regulatory surveillance. In addition, the railways should be free to engage in various forms of transportation, just as other persons and corporations are now free to do. If this were permitted they would develop into all-around transportation agencies, capable of providing a co-ordinated service."

Central Vermont To Organize Highway Subsidiary

The Central Vermont has been authorized by the Vermont Public Service Commission to organize the Central Vermont Transit Corporation for the purpose of operating motor trucks and buses in that state.

The highway operating company, which will be organized in the immediate future, is to be a subsidiary of the Centmont Corporation, which latter is a subsidiary of the parent railway.

A statement issued by Edmund Deschenes, manager of the Central Vermont, comments upon the organization of the highway affiliate as follows:

"The Central Vermont, in common with other rail carriers, believes it should be in the position to supplement its rail service by the use of trucks and buses when the occasion warrants and the public good requires, and it was with this idea in mind that our company asked for the certificate of public good.

"We have not, as yet, made any decision as to what routes the proposed Central Vermont Transit Corporation buses or trucks will serve. Acting under authority of the Commission's ruling, it is proposed to effect the organization of the Transit Corporation in the immediate future."

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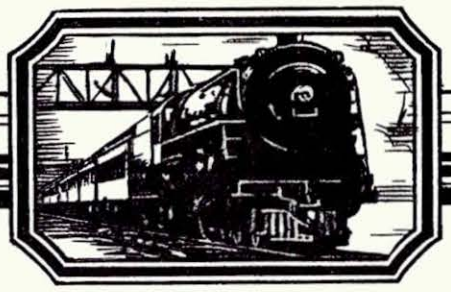

TO ECONOMIZE— MODERNIZE

RIGHT NOW offers an excellent opportunity for railroad men in general to ask themselves a few questions—

We have a few in mind that we think quite pertinent—for instance—

As the railroad business gets more and more competitive, should not the item, gain in net revenue, become more and more important when making capital expenditures?

How much of the capital expenditures made by our railroads during the past five years has contributed toward a gain in net revenue?

Was the gain, if any, in each case, commensurate with the amount expended?

Of all the items bought by a railroad, are there many, if any, that offer greater opportunity for better service at lower costs than modern locomotives?

And right in line with this last question, is it not a fact that practically all railroads today are using the best locomotives they own?

Why?

When business picks up and some of the older freight engines, with their insufficient capacity for high speed, are sent out ahead of the present day modern freight engine, what is going to happen?

And will net earnings under such conditions pick up anywhere commensurate with the pick up in gross earnings?

And if not, why not?

We believe that in the answers to the above questions there is much food for thought.

American Locomotive Company
30 Church Street New York N.Y.

B. & O. Counsel Assails I. C. C. Regulatory Policies

When it valued the railway properties, if the Supreme Court of the United States is to be believed, the Interstate Commerce Commission flouted the instructions of Congress and disregarded the law, John J. Cornwell, general counsel of the Baltimore & Ohio, held in an address delivered on December 1 before the Bar Association of Baltimore. In his search for influences responsible for this attitude on the part of the Commission, Mr. Cornwell proceeded to examine the trend of thought of individual commissioners as obtained from their unofficial utterances and in this connection turned his attention to the recent speech of Commissioner Joseph B. Eastman before the American Academy of Political and Social Science in Philadelphia.

Mr. Cornwell stated that he would not attempt to dissect Commissioner Eastman's address but referred to those sections in which the Commissioner expressed his partiality to government ownership of railroads. He called attention to the fact that Mr. Eastman had suggested that the time is not yet ripe for such federal control "But can it be," Mr. Cornwell asked, "that Commissioner Eastman would ripen the situation by another decade of starved regulation of the railroads; that he would wait until their value has been reduced to ten or five billions of dollars, or until the security holders have been entirely 'liquidated?' Of course, that would ruin the millions of stockholders and bondholders and impair the forty-two million accounts in the savings banks and the value of the sixty millions of insurance policies outstanding, which are supported, in large part, by railway bonds.

"Were Commissioner Eastman a private citizen his views would be of but passing interest, but as an Interstate Commerce Commissioner, they can but shock the country. Already his expressions have caused public utility and railroad securities, it is believed, to depreciate in the hands of the holders to the extent of several billions of dollars. Such a thing could not, would not, happen anywhere else in the world. Certainly Russia would not stand for it. Stalin would not permit an official charged with the responsibility of enforcing its system of state capitalism to continue his work if he went about the country proclaiming his personal opposition to the system he was administering.

"Is it any wonder holders of railroad securities become alarmed for their future? Does not the power to regulate, even more than does the power to tax, carry with it the power to destroy? Would you place on guard before your house a policeman who was an open advocate of burglary?

"Is it not human that men, in their official capacity, are unconsciously influenced by their fixed and conscientious views on questions they are called upon to consider?

"Does Commissioner Eastman discern no impropriety in his publicly condemning, even as a private citizen, a system which, as a high public official, he is under oath to administer according to the law of the land? Now does he see nothing wrong in his advocating a different system from that under which he was appointed?

"The people of this country, through their President and Congress, renounced government ownership and operation of railroads in 1920 and thought they had made safe private ownership and operation with the passage of the Transportation Act. The decade that followed saw the railway systems rehabilitated and the public served more efficiently than ever before, despite the growth of subsidized and unregulated competition and their failure to get what the law plainly said they should have."

Government Competition With the Express Companies

It seems inconsistent that the Postmaster General should seek to add one-half cent per ounce to letter postage, (which, undoubtedly comes nearer paying its way than any other branch of the postal service) to cover losses on business handled in competition with express companies, simply because the government has a letter-carrying monopoly. Postmaster General Brown is quoted as saying: "The only practical solution appears an increase in the rate of first-class mail, where the government has a monopoly and, therefore, would run no risk of driving business to competitors."

All of which makes one wonder what might happen to parcel post rates if the government succeeds in driving the express companies out of business, as it is evidently trying to do.

The Postmaster General, also, is quoted as saying: "Express companies, for instance, handle merchandise, parcels and newspapers as rivals of the government." One would infer from this statement that the postal department had always been in the package-carrying business, and that the express companies had "butted in," when, as a matter of fact, the express companies had been in the package-carrying business for more than half a century before the government inaugurated parcel post.

It should be remembered that private capital is invested in railroads and express companies and yet, in effect, the government would practically confiscate their earnings by engaging in a highly competitive business and use its power to wring from the people in taxes enough to wipe out any deficit that may exist in its business operations and the people must pay, but they do not always know it.

—From an Editorial in the Chelsea (Mass.) Evening Record.

Report From I. C. C. Awaited on Barge Cotton Rate

The Secretary of War, Patrick J. Hurley, is having a new experience in his capacity as arbiter of the cotton freight rate structure of the United States. Mr. Hurley was called upon, presumably by the President, about six weeks ago, as head of the department of the government that includes the Inland Waterways Corporation within its jurisdiction, to decide whether the federal barge line should be allowed to reduce its rate on cotton from Memphis to New Orleans to $1 a bale for high-density bales and $1.25 for standard density bales, when tendered to the barge line in lots of 2,000 bales as a minimum. The rates were suspended by the acting Secretary of War, F. H. Payne, on October 16, since which time Secretary Hurley has received two advisory reports on the subject to aid him in his decision as to whether the suspension shall be continued or the rates put into effect. One was a report as to the facts by Nuel D. Belnap, of a law firm that often acts as counsel for the Inland Waterways Corporation, and the other was a recommendation by the advisory board of the corporation. Later Secretary Hurley announced that he had called upon the Interstate Commerce Commission to aid him in reaching a decision, as he had found that the War Department is not especially equipped with the necessary rate information. He said he expected a report from the commission shortly, but so far as can be learned at the commission's offices the War Department has not yet asked any questions that would lead it to undertake the preparation of any very comprehensive report.

Meanwhile the period in which cotton is usually shipped in volume is passing and, according to reports from New Orleans, a large amount of cotton that had been trucked to the river points in anticipation of the low barge-line rate has been moving on independent barges at rates not quite so low as those proposed by the government line.

Secretary Hurley said once that he had asked the commission to give him a report as to "the facts" as to the effect of the proposed reduction on other cotton rates prescribed by the commission and on variously located producers and markets. On another occasion he said he had asked the commission for "the truth", saying he did not want to create a small situation that might affect a much greater one. Later he said he had asked the commission to inform him what would be a fair rate under the law. He said that Congress had laid down a policy to "foster and preserve in full vigor both rail and water transportation" which requirement had complicated the situation very much. Also, he said "the fight is essentially between rail and truck, so that when it came to a question of rates we had to appeal to the Interstate Commerce Commission to make available the facts." It took the commission some years to ascertain and promulgate the facts to its satisfaction as to the rail rates which would be affected by the barge line cotton rate.

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TIGERWELD PLUG TYPE SIGNAL BONDS

THERE is no substitute for unvarying quality in signal bond construction. And—so—the Northern Pacific—like other leading railroads—depends 100% on Tigerweld Signal Bonds for the efficient operation of its signal equipment. Experience proves that these Bonds—either in the single or duplex type—offer flexibility and low cost—and withstand severe mechanical abuse and have a low resistance that adds greatly to the safety of the track circuit. You are invited to write for further information.

STANDARD *Equipment on the Northern Pacific*

Along the right-of-way of the Northern Pacific. This view shows the application of Tigerweld Signal Bonds

DS-1

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1831 COMMEMORATING AMERICAN STEEL & WIRE COMPANY 100 YEARS of PROGRESS IN WIRE MAKING 1931

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Western Executives Not to Act Until Brotherhoods Meet

At a meeting of the executives of the western railways at Chicago on November 30, it was decided that no action will be taken by these railways regarding wages until after representatives of the brotherhoods meet at Chicago on December 8 to consider the carriers' proposal that the employees accept a voluntary reduction of 10 per cent in wages for one year. It was also agreed that in the event that the brotherhoods refuse to reduce wages voluntarily, the railways will be forced to post notices of intention to abrogate their contracts and move to bring about wage reductions through avenues prescribed by law. The executives also considered the brotherhoods' proposal for a six-hour day but deferred action until after December 8.

In the meantime several western railroads have undertaken separate negotiations direct with their employees. A voluntary minimum reduction of 15 per cent in pay was asked of approximately 30,000 organized employees of the Chicago & North Western through 18 general chairmen by President Sargent on November 30, following earlier requests of 10 per cent made to the employees of their respective roads by the Minneapolis & St. Louis, the Great Northern, the Northern Pacific, the Baltimore & Ohio and the New York Central. The Chicago, Burlington & Quincy has announced a salary reduction of from 10 to 20 per cent, affecting unorganized employees who receive $3,600 a year or more. In its plea to reduce wages, the North Western cited general conditions, the drought, the grasshopper plague and the condition of the farmer, all of which are reflected in the earnings of the railroad. The letter submitted by the North Western to the employees and outlining the proposal also declared that the reduction would not be lengthy and suggested that readjustment in the pay scale would follow improving trends in business. It asked the chairmen to give prompt consideration to the request.

Supreme Court Reverses Ohio County Court

A section laborer helping to cut steel rails with a cold chisel, wearing no goggles, was struck by a steel chip and one of his eyes was destroyed. He was an experienced workman, who knew the danger, and the value of goggles, which he had previously worn.

The Supreme Court of the United States, in an action under the Federal Employers' Liability Act, reversed a judgment for the plaintiff by the Court of Appeals of Pike County, Ohio (of which the State Supreme Court had denied a review) holding that the plaintiff's injury resulted from the ordinary hazards of his employment, which he fully understood and voluntarily assumed.

The obligations of the parties depend upon the act and applicable principles of common law as interpreted and applied by the United States Supreme Court; this in all courts, Federal and State.—Chesapeake & Ohio v. Kuhn, Opinion by Mr. Justice McReynolds. November 23, 1931.

St. Louis Shippers Ask Changes in Rate Laws

(*Continued from page 875*)

After citations of unsatisfactory conditions brought about by mileage rates the resolution sets forth that "the numerous rate investigations and general readjustments of freight rates upon mileage bases are caused primarily (1) by the inability of the railroads, in numerous instances, to obtain relief from the long-and-short haul provision of section 4 of the Interstate Commerce Act; (2) by the present interpretation and administration of paragraph (1) of section 3 of the Act pertaining to undue prejudice and preference . . . . . and (3) by that portion of the so-called Hoch-Smith Resolution in which Congress directed the Interstate Commerce Commission to make a thorough investigation of the rate structure together with such readjustments as the commission thinks are necessary, and which investigation has been under way for several years past with much chaos and confusion in industry.

The latter, the Association would have repealed. Because the inability of the railroads to obtain fourth section relief in numerous instances prevents them from meeting competition and also from permitting industries served by them to meet competition, the association favors a liberalization of section 4 by the substitution of an amended paragraph (1). The suggested amendments would restore the phrase "under substantially similar circumstances and conditions" in the prohibition against the carriers' receiving greater compensation for a shorter than for a longer distance and omit the following: But in exercising the authority conferred upon it in this proviso the Commission shall not permit the establishment of any charge to or from the more distant point that is not reasonably compensatory for the service performed; and if a circuitous rail line or route is, because of such circuity, granted authority to meet the charges of a more direct line or route to or from competitive points and to maintain higher charges to or from intermediate points on its line, the authority shall not include intermediate points as to which the haul of the petitioning line or route is not longer than that of the direct line or route between the competitive points; and no such authorization shall be granted on account of merely potential water competition not actually in existence."

To paragraph (1) of section 3 the association would add "Provided that no common carrier subject to the provisions of this Act shall be found guilty of undue prejudice and/or undue preference unless it can put an end to the discrimination by its own act."

Eastern and Western Class Rates in Effect

General revisions of class rates in eastern and western trunk line territories and interterritorial rates published by the railroads in compliance with orders of the Interstate Commerce Commission following investigations extending over a period of years became effective on December 3, with the exception of parts of the schedules which were suspended by the commission on December 2 for seven months for further investigation. The rates were prescribed by the commission in reports issued over a year ago but were not made effective until the commission issued orders requiring that the rates be established by December 3. The commission has insisted that its revisions on the whole will bring about increases in revenue, originally estimated at $10,000,000 to $12,000,000 for western roads and from $20,000,000 to $25,000,000 for the eastern roads, but the railroads have declared these estimates to be optimistic and have repeatedly sought to have the commission reconsider the rates. The eastern roads said that the net effect of the revision would be to reduce their revenues since the increases are largely on short-haul traffic on which truck competition is encountered while the reductions are on the long-haul traffic and the classes of freight which move in greatest volume.

Mississippi Road Bonds Likened to Fog Over Real Property

Mississippi's $70,000,000, of road district bonds rest like a fog over the real property of the State, constituting a lien more onerous than a mortgage, says J. N. Flowers, general counsel of the Gulf, Mobile & Northern in an article appearing in the November issue of the Mississippi Law Journal.

"These bonds" Mr. Flowers continues "call for $3,500,000 in interest annually and about $3,000,000 of principal, making an annual total at this time of about $6,500,000. . . . . One class has used and consumed the roads; another class must pay the bonds. One class gets the benefits; another class carries the burden.

"The State can no more afford to furnish free highways, constructed at public expense, than it can afford to furnish free the vehicles themselves, or provide each mechanic with a kit of tools, or each farmer with mules and plows, or pay one-half of the merchant's losses, or build his plant for the manufacturer, or buy his printing outfit for the newspaper man."

Asserting in conclusion that "property owners carrying the burden ought at least to see that their sacrifice is not in vain," Mr. Flowers proposes the following:

1. That it is the duty of the State to take such measures as will protect its highways from undue injury.
2. That it should charge for the privilege of using its highways as nearly as may be possible in proportion to the amount of damage that a given vehicle does these highways, the amount which the requirements of that vehicle caused to be spent on the highways, and the costs attendant upon the necessary regulation and enforcement as to safety, etc.

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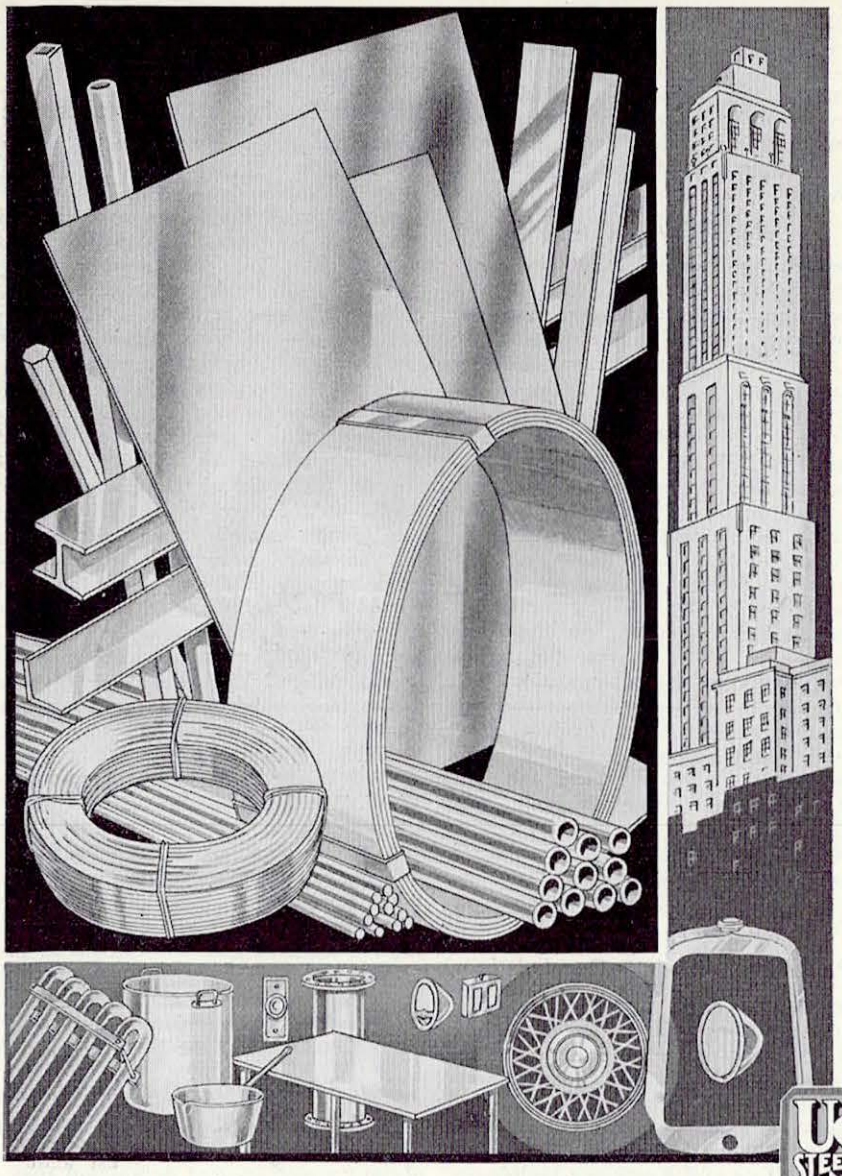

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¶ **MANUFACTURING and INDUSTRIAL**—Machinery and furnace parts, dampers, fans, preheaters, pumps, conveyors, turbine blades, nozzles, plungers, and machinery specialties.

¶ **CHEMICAL**—Vats, tanks, stills, digesters, condensers, retorts, paper and pulp manufacturing equipment, circulation systems, and laboratory apparatus.

¶ **OIL REFINING**—Bubble caps, still tubes, linings, heat exchangers, ducts, containers, tanks, agitators, and other refining equipment.

¶ **FOOD HANDLING**—Pasteurizers, tables, hospital and hotel kitchen equipment, restaurant fixtures, cafeteria trays, food preserving and dairy machinery and accessories, ice cream and milk containers and utensils.

¶ **ARCHITECTURAL**—Structural members and supports, hinges and hardware, decorative metal embellishments, flat surface facings, moldings, doors, grilles, panels, and ornamental work.

¶ **HOME APPLIANCES**—Kitchen equipment, cooking and canning utensils, furniture, cabinets, electrical appliances, sinks, plumbing fittings, stoves, ranges, and tableware.

¶ **MISCELLANEOUS**—Packing house equipment, soda fountain counters and fixtures, display cases, humidors, handles, hooks, trays, golf clubs, skates, switch boards, metallic mirrors, laundry machinery, tank cars, railway car parts and fittings, and many other uses where beauty and resistance to corrosion are important factors.

3. That the wear upon the highways is the same whether a given vehicle is privately operated for hire.
4. That operators making an extraordinary use of these "special facilities" may be required to pay a reasonable compensation for the privileges enjoyed, regardless of whether they are engaged in domestic or interstate commerce.

Annual Dinner Transportation Club of Louisville

W. R. Cole, president of the Louisville & Nashville, and H. G. Moulton, president of the Brookings Institute, will be the principal speakers at the nineteenth annual dinner of the Transportation Club of Louisville, Ky., to be held in that city on December 9.

International Limited, 48.4 M.P.H.

The International Limited, fast train of the Canadian National between Montreal and Chicago, is now scheduled through between these cities, 848 miles, in 17 hours, 30 minutes; or at an average of 48.4 miles an hour. This rate is said to be faster than that of any other train between the Atlantic Seaboard and Chicago. The average of 48.4 includes a rate of 55.66 between Montreal and Toronto, 334 miles, and one of 44.7 between Toronto and Chicago.

Class Rates From Arizona Found Reasonable

The Interstate Commerce Commission has dismissed a complaint filed by the Arizona Corporation Commission which had attacked the all-rail class rates between points in Arizona and southern New Mexico and eastern points, finding that the rates were not measurably unreasonable or otherwise unlawful. The commission, however, will expect the roads to grade down the rates to and from points beyond El Paso so as to shade by reasonable degrees into the present adjustment.

Joint Technical Meeting to Discuss Research

The subject of railway laboratory testing and research in the solution of both mechanical and engineering-department problems is scheduled for consideration at a joint meeting of the Western Society of Engineers, the Western Railway Club, and the American Society of Mechanical Engineers, Chicago section, on Monday evening, December 14, at the Hotel Sherman, Chicago. The principal speaker will be C. T. Ripley, chief mechanical engineer, Atchison, Topeka & Santa Fe. Mr. Ripley's announced subject is "The Organization, Accomplishments and Possibilities of Railway Research Engineering."

Eastern Demurrage and Storage Bureau

The Department of Demurrage Supervision, of the Transportation Division, American Railway Association, 30 Vesey Street, New York City, which covers the Trunk line and Central Freight Association territories (excluding the New England states) has been reorganized, with the title "Eastern Demurrage and Storage Bureau." The office continues under the same management, but under the supervision of an executive committee composed entirely of member roads. Heretofore the management has been supervised by the general committee, Transportation Division, which included many members outside the territory for which the bureau acts.

Worms Will Turn

Commenting upon the unanimous action of the Mohawk Valley (N. Y.) Towns Association calling upon its executive committee to support legislation to regulate and increase the taxation of commercial highway transport, the Wall Street Journal says:

"From the emphasis here placed upon taxation it may be surmised that the Mohawk Valley Association is concerned over the question whether commercial vehicles on the highways are receiving too much for the taxes they now pay. The question is a highly pertinent one and is not answered by the standing contention of the automotive industry that motor vehicles pay in total taxation the whole cost of supporting the public roads. Supposing that to be true, the fact still remains that for their tax payments they get their "way and structures," whereas the railroads are heavily taxed and still must provide and maintain their own roadbed and rails.

"Slowly but surely the tax-paying worms are turning, with at least the intention of finding out what is being done to them."

Parcel Post Hearings Concluded

Hearings on the application of the Postmaster General for the consent of the Interstate Commerce Commission to a general revision of parcel post rates intended to wipe out the estimated deficit of $15,000,000 a year in the parcel post service were concluded before Commissioner Tate and Examiner Mullen on November 28. Hearings were begun in the Spring but were postponed in May to enable the National Industrial Traffic League and other representatives of protesting shippers to make a statistical study of the effect of the proposed rates on traffic and to examine the cost apportionment system on which the post-office department estimated the parcel post deficit.

This study was put in evidence by R. W. Fletcher, a consulting accountant, who made a new cost apportionment estimate indicating that the department had understated its revenues attributable to the parcel post by $7,750,000 and had overstated its expenses attributable to that service by some $44,000,000. Vigorous objection to the introduction of this evidence was made by counsel for the department, but Commissioner Tate allowed it to be received. A conference will be held in his office on December 9 to consider whether there shall be a proposed report in the case. The department's proposed revision would increase the rates for the shorter hauls and smaller packages but would reduce those for the longer hauls and larger packages. The increases were opposed by representatives of the shippers and the decreases were opposed by the Railway Express Agency.

Railroad Employees Organize League

Two hundred employees of the Nashville, Chattanooga & St. Louis organized an association to be known as the Tennessee Railroad Employees' and Citizens' League at a meeting in Nashville, Tenn. on November 24. The membership of the league will be drawn from the ranks of railroad men residing in Tennessee and members of their families. Interested citizens, in sympathy with the purposes of the organization, may upon request be taken into the league as honorary members. The league is a non-profit organization created for the purpose of increasing the traffic of the Tennessee railroads; to influence, in every legitimate way, public opinion to a realization of the economic advantages of railroad transportation in the life of the communities they serve; to take active steps to secure fair play for railroads; and to promote those things which mutually benefit railroad employees and the companies from which they obtain their livelihood. Officers elected are as follows: President, John L. Curran; vice-president, J. W. Weiler; and secretary-treasurer, M. W. Washburn, 929 Broad street, Nashville.

A similar organization has been formed in Virginia under the name of the Virginia Railroad Workers' and Taxpayers' Association for the purpose of co-ordinating the work of local associations in that State. H. H. Parker, president of the Norfolk-Portsmouth Railroad Employees' and Taxpayers' Association has also been elected president of the State association.

Short Lines Urge Relief Legislation

Declaring that the financial integrity of the railroads is "so menaced in the present unprecedented depression that a continuation of adequate railway service without some governmental assistance is clearly impossible" and that the short lines are particularly affected, a delegation of twenty-two representatives of the American Short Line Railroad Association called on President Hoover on November 25 to urge a comprehensive program of railway relief. The delegation was headed by Bird M. Robinson, president of the association, and the program outlined was that included in resolutions adopted at its annual meeting at Louisville, Ky., on October 14.

The President was requested to consider, as a part of any plan he may have in mind for rehabilitating the credit of the railways, recommendations that Congress, as an emergency measure, enact a law along the lines of Section 210 of the transportation act of 1920 which provided for a revolving fund of $300,000,000 from which loans were made to railroads by the Interstate Commerce Commission; that the recapture clause be repealed with a provision for the return of any funds already collected under it; and that highway and water transportation, including that of the Inland Waterways Corporation, be placed under the

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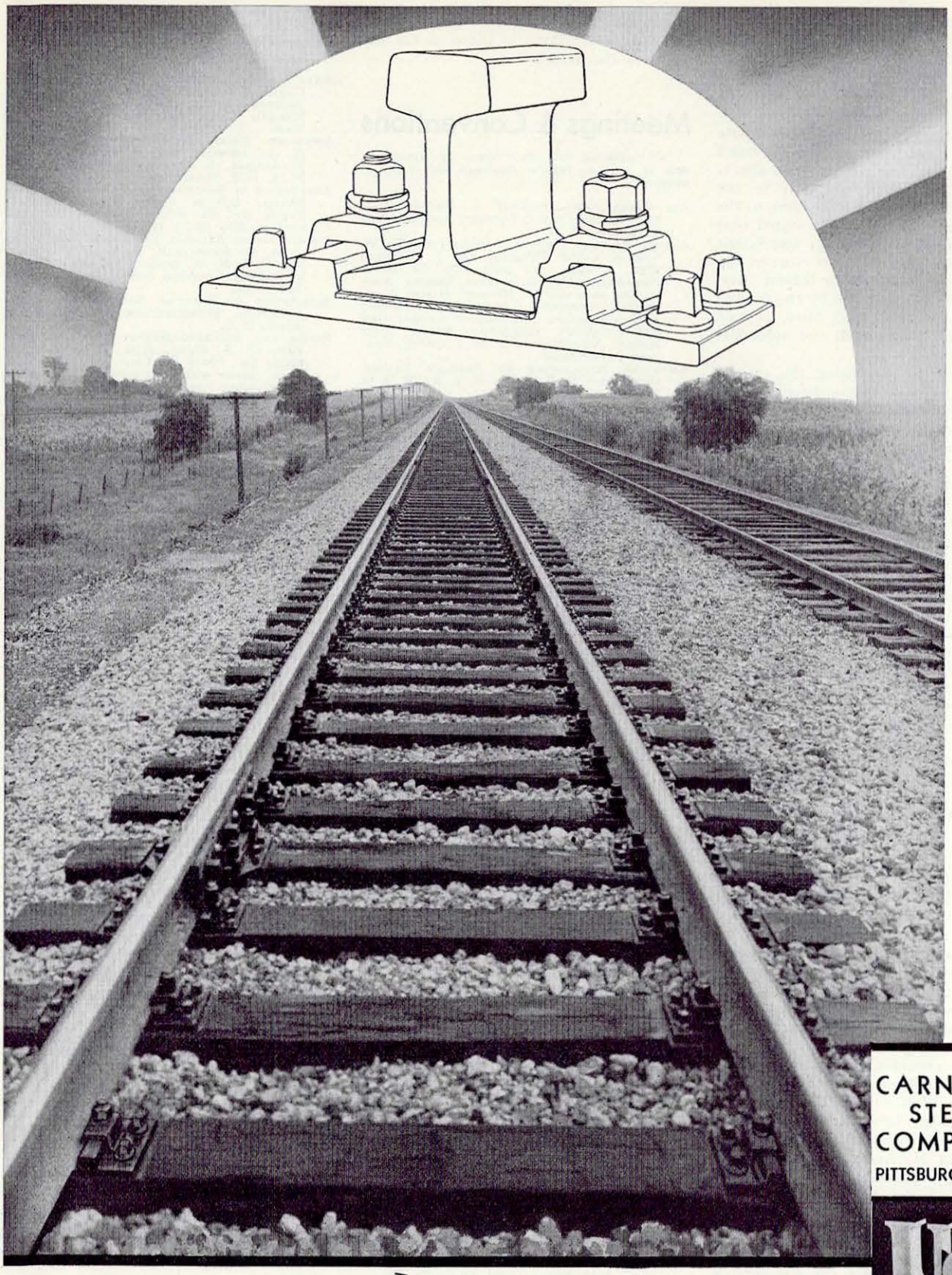

GEO ushers in a new day in track construction

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164

regulation of the Interstate Commerce Commission in the same manner that rail carriers are now regulated.

The resolutions also said that the short lines are suffering more acutely than the larger roads from automobile competition and that they, as a class, originate more than one-fifth of the railroad freight traffic of the country and therefore are indispensable not only to the localities they serve but as feeders to the major carriers. It was also stated that in most instances the stocks and bonds of short line railroads are owned by people local to the territory served "who are most seriously affected by the decline in business of these short lines, as well as the general commercial and industrial depression."

In addition to presenting the resolution the short line officers discussed the general situation with President Hoover for approximately half an hour. Daniel Willard, president of the Baltimore & Ohio, had also discussed the railroad situation with the President at breakfast that day.

The short lines are especially affected by the recapture clause because the commission's recapture work, at least so far as completed reports are concerned, has been concentrated largely on the short lines which present less complicated problems than those of the larger roads, and the commission has issued many reports finding recapturable excess on short lines for one or more exceptional years although deficits were experienced in many other years and in some instances the lines had been abandoned before the commission got around to ascertaining the recapturable amounts.

Association Formed to Support Fifth Eastern System

Railroads, chambers of commerce and others interested are being invited to become members of the Fifth Eastern Trunk Line Association, Inc., which has been organized to oppose before the Interstate Commerce Commission the application for a modification of the commission's consolidation plan to provide for a four-system grouping of the eastern railroads and to advocate the five-system grouping of the commission's plan which provides for a fifth eastern system to be built up around the Wabash, Norfolk & Western and Seaboard Air Line. Circular letters announcing the plan of the association have been sent out by Alan H. Andrews, as secretary, stating that Frederick I. Cox, formerly a member of the Interstate Commerce Commission, has been elected chairman of the association and that it will ask leave to intervene in the proceedings before the commission now set for hearing on January 6.

It is stated that the association will be organized to present the necessary data to the commission indicating the necessity for the preservation of the plan for the fifth system and that if the commission should approve the four-system plan it will forever bar from the towns, cities and districts located on the fifth-system lines an opportunity to some of ever being located on any trunk line and to others the advantages of additional trunk line facilities. The address of Mr. Cox's office in Washington is given as the address of the association.

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION—T. L. Burton, Room 5605, Grand Central Terminal Building, New York City.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Blvd., Chicago. To meet with Air Brake Association, Car Department Officers Association, International Railroad Master Blacksmiths' Association, International Railway Fuel Association, International Railway General Foremen's Association, Master Boiler Makers Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J. 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Room 800, 1017 Olive St., St. Louis, Mo. Next meeting, June 14-16, 1932, Detroit, Mich. Annual meeting.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. R. R., 836 Federal St., Chicago.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.
- Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.
- Freight Station Section. — R. O. Wells, Freight Agent, Illinois Central Railroad. Chicago.
- Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.
- Protective Section.—J. C. Caviston, 30 Vesey St., New York.
- Safety Section.—J. C. Caviston, 30 Vesey St., New York.
- Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York.
- Division II.—Transportation.—G. W. Covert, 59 East Van Buren St., Chicago.
- Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.
- Division IV.—Engineering.—E. H. Fritch 59 East Van Buren St., Chicago. Next meeting, March 15-16, 1932, Palmer House, Chicago. No exhibit by National Railway Appliances Association at 1932 meeting.
- Construction and Maintenance Section.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting, March 15-16, 1932, Palmer House, Chicago.
- Electrical Section—E. H. Fritch, 59 East Van Buren St., Chicago.
- Signal Section.—R. H. C. Balliet, 30 Vesey St., New York.
- Division V.—Mechanical.—V. R. Hawthorne, 59 East Van Buren St., Chicago.
- Equipment Painting Section.—V. R. Hawthorne, 59 East Van Buren St., Chicago.
- Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y.
- Division VII.—Freight Claims.—Lewis Pilcher, 59 East Van Buren St., Chicago.
- Division VIII.—Motor Transport.—George M. Campbell, 30 Vesey St., New York.
- Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next convention, October 18-20, 1932, Toronto, Ont. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. W. Large, Gen. Agri. Agt., C. R. I. & P. Ry., Chicago, Ill. Annual meeting, June 15-17, 1932, Brown Hotel, Louisville, Ky.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association, Division IV.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting, March 15-16, 1932, Palmer House, Chicago. No exhibit by National Railway Appliances Association at 1932 meeting.

AMERICAN RAILWAY MAGAZINE EDITORS ASSOCIATION.—Miss E. Kramer, M-K-T Employes Magazine, St. Louis, Mo. Next convention, April, 1932, San Antonio, Tex.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C., M., St. P. & P. R. R., 11402 Calumet Ave., Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Paul D. Mallay, Johns-Manville Corp., 292 Madison Ave., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1104 Chandler Building, Washington, D. C. Next meeting, January 26-28, 1932, Hotel Jefferson, St. Louis, Mo.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, May 18-20, 1932, Louisville, Ky.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Station, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, Transportation Building, Washington, D. C.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—S. A. Baber, High Grade Manufacturing Co., 10418 St. Clair Ave., Cleveland, Ohio. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2276 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, 2nd Monday in each month, except June, July and August. Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 South Morgan Street, Chicago.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago. Regular meetings, 2nd Monday in month, except June, July, and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 So. Main St., Los Angeles, Cal. Regular meetings, 2nd Monday of each month, except July, August and September, Room 299, 610 So. Main St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegman, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August, American Hotel Annex, 6th and Market Sts., St. Louis, Mo.

CENTRAL RAILWAY CLUB OF BUFFALO.—T. J. O'Donnell, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 453 E. 6th St., Cincinnati, Ohio. Meetings 2nd Tuesday in February, May, September and November, Hotel Gibson, Cincinnati, O.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, second Monday each month, except June, July, August, Auditorium, Brotherhood of Railroad Trainmen's Building, West 9th St., and Superior Ave., Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY CONGRESS.—Cairo, Egypt, January 10-16, 1933.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. T. Winkless, Room 700 La Salle Street Station, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn.

MASTER BOILER MAKERS ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—(See Car Department Officers' Association.)

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual convention, 1932, Hot Springs, Ark.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Annual meeting, March 14, 1932, 1014 South Michigan Ave., Chicago. No exhibit at A. R. E. A. convention in 1932.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: J. L. Walsh, (Honorary vice-chairman), Supt. Safety, M.-K.-T. R. R., Dallas, Tex.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, except June, July, August and September, Copley Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. I. McKay, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August, 29 W. 39th St., New York City.

PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1124 Woodward Building, Washington, D. C. Next convention, 1932, Buffalo, N. Y.

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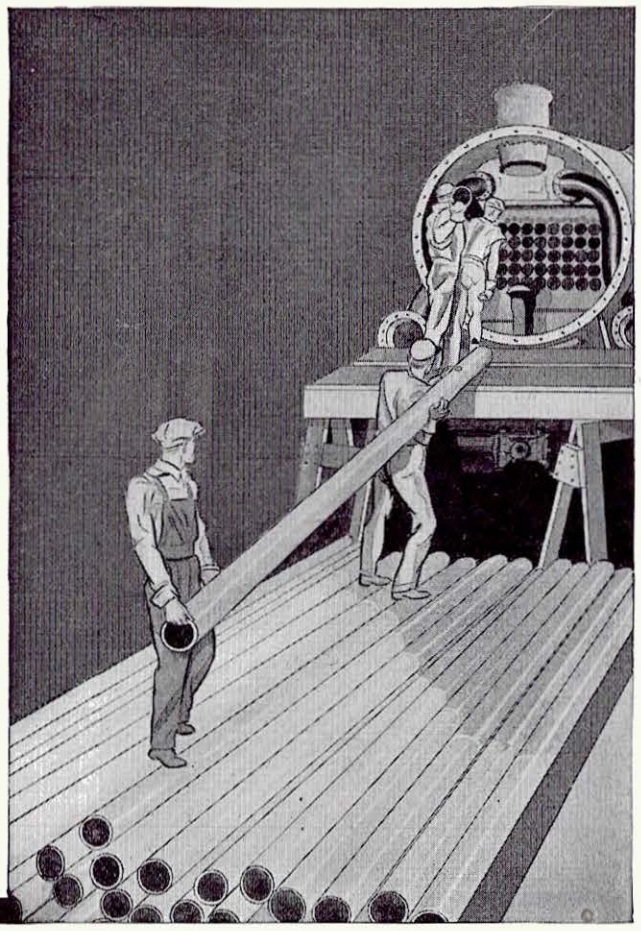

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IRON BOILER TUBES have been standard on many roads due to their superior corrosion resistance and despite other draw-backs.

Now, in tubes of Toncan Iron the old disadvantages disappear, while corrosion-resistance is still further improved.

There are no seams in a Toncan Iron boiler tube. Moreover working and welding are easy and leave the corrosion-resisting properties of the metal unaffected. Toncan Iron is uniform in composition and free from the uncertainties of slag spots and seams.

Judged from any view-point, Toncan Iron is the ideal boiler tube. Performance records prove its economy.

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The Birdsboro Steel Foundry & Machine Company of Birdsboro, Penna., has manufactured and is prepared to supply under Toncan license, copper-molybdenum castings for the locomotive.

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General Office: Youngstown, Ohio

RAILWAY BUSINESS ASSOCIATION.—Frank W Noxon, 1112 Shoreham Building, Washington, D. C.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1841 Oliver Building, Pittsburgh, Pa., Regular meetings, 4th Thursday in each month except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R. Baltimore. Md.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION —J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division. Purchases and Stores Division and Motor Transport Division. American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division 1

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION. — T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa Next convention, September 20-22, 1932, Hotel Stevens, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal Drawer 24, M. P. O., St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August. Statler Hotel, St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S.E., Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November. Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. Ry., Atlanta, Ga.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

TORONTO RAILWAY CLUB.—J. A. Murphy, 1405 Canadian National Express Building, Toronto 2, Regular meetings 1st Monday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., Carbon & Carbide Building, Chicago. Meets with Roadmasters and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION. — W. O. Thompson, 1177 East 98th St., Cleveland, O.

WESTERN RAILWAY CLUB.—J. H. Nash, Dri-Steam Valve Sales Corp., 122 S. Michigan Ave., Chicago. Regular meetings 3rd Monday each month, except June, July, August and September, Hotel Sherman, Chicago.

* * *

A Hint to Wise Travelers

The Committee on Education of the Safety Section, American Railway Association, addresses its December "lecture" not to railroad officers and employees, but to the public; and it is in the shape of a large colored poster (Poster No. 102) showing a Christmas tree, bedecked with jewels; not an exhortation to improve the safety record, but a call to note the improvement already accomplished. The poster shows the tree in green, with lettering of red.

Equipment and Supplies

FREIGHT CARS

THE ALASKA RAILROAD is asking for bids on 10 Hart convertible ballast cars of 50 tons' capacity.

MOTOR COACHES

THE FONDA, JOHNSTOWN & GLOVERSVILLE has ordered three Mack, model BG, motor coach chassis.

IRON & STEEL

THE INDIANA HARBOR BELT has ordered 325 tons of structural steel for a bridge at Melrose Park, Ill., from the Chicago Bridge & Iron Co.

THE ST. JOHNSBURY & LAKE CHAMPLAIN has ordered 270 tons of steel for rebuilding bridge 93 at Sheldon, Vt., from the McClintic-Marshall Corporation.

THE LONG ISLAND has placed an order through Foley Bros., the contractors, for 250 tons of steel with the American Bridge Company for construction work on a bridge at Floral Park, L. I.

Supply Trade

Boyd Fisher of New York has been appointed general manager of the **National Machine Tool Builders' Association,** Cincinnati, Ohio, effective December 15, succeeding **Ernest F. DuBrul** resigned.

William McConway, Jr., president of The McConway & Torley Company, Pittsburgh, Pa., announces the sale of the business and good will of that company to Donald Symington and associates of Baltimore, Md. The McConway & Torley Company was founded by the late William McConway in 1868. The business will be continued in Pittsburgh by the new interests under the name of **The McConway & Torley Corporation** with **Donald Symington** as president, but with no material changes in existing personnel.

Sheldon, Morse, Hutchins & Easton, a new company with headquarters at 191 West Tenth street, New York City, has been organized by **Dr. H. H. Sheldon, H. A. Morse, L. W. Hutchins** and **Dr. W. H. Easton,** to provide service for facilitating the marketing of industrial products. The company will also furnish manufacturers with a complete sales research, advertising and publicity service. Dr. Sheldon is chairman of the physics department of Washington Square College, New York University; Mr. Morse is president of H. A. Morse, Inc., industrial advertising and marketing counsel; Mr. Hutchins is director of public relations for the Swann chemical companies, and Dr. Easton was for many years with the advertising department of the Westinghouse Electric & Manufacturing Company, at New York.

OBITUARY

James F. Prendergast, president and treasurer of the Prendergast Company, Marion, Ohio, for many years engaged in supplying hardwood lumber to railroads in the United States, died on November 15 at his home in Marion, at the age of 68.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to Robert E. McKee, El Paso, Tex., for the construction of a steam power plant at Needles, Cal., to serve this company's mechanical and other facilities at that point.

CHESAPEAKE & OHIO.—This road has let to the Langhorne & Langhorne Company, Huntington, W. Va., a contract amounting to $57,500 for the extension of two yard tracks at Raleigh, W. Va. A contract has also been awarded to K. E. Reed & Company, Charleston, W. Va., for the extension, from 90 ft. to 130 ft., of five stalls in the roundhouse at Peru, Ind., at an approximate cost of $27,700.

CHICAGO & NORTH WESTERN.—Contracts for the construction of substructures for highway subways to carry the tracks of this company over United States Highway No. 141 near Fox Point, Wis., and over Highway No. 10 near Appleton, Wis., have been awarded to S. G. Cool, Chicago.

SOUTHERN PACIFIC.—A contract for the construction of a reinforced concrete and steel highway subway at San Jose, Cal., at a cost of about $130,000, has been awarded to Robert E. McKee, Los Angeles, Cal.

WABASH.—A contract has been awarded to the Industrial Construction Company, St. Louis, Mo., for the construction of a reinforced concrete subway to carry West Florissant avenue, Jennings, Mo., under the tracks of this company, at a cost of about $25,000.

THE SIXTH WORLD MOTOR TRANSPORT CONGRESS, sponsored by the International Automobile Manufacturers Association, will be held in Paris in June, 1932, according to a recent announcement by the National Automobile Chamber of Commerce.

Subjects which have been scheduled for consideration include, "The Rail-Motor Coordination Problem" and "Plans for Counteracting the Universal Upward Trend in Motor Vehicle Taxation." Problems of highway finance will also be discussed at the Congress.

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BETTER FIRES

FIREBAR CORPORATION
CLEVELAND OHIO.

Financial

ALABAMA, TENNESSEE & NORTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $160,000 of prior lien mortgage 6 per cent bonds to be pledged and repledged as security for short term notes.

ALTON.—*Insull Withdraws Director Application.*—Samuel Insull, of Chicago, has withdrawn his application to the Interstate Commerce Commission for authority to serve as director of this company while also holding the position of chairman of the board of the Chicago & Illinois Midland, after having been advised by Director Sweet of the commission's Bureau of Finance that he would recommend denial of the application because of competition between the two carriers.

CENTRAL OF ARKANSAS.—*Final Recapture Report.*—This company has contributed $2,064 to the Interstate Commerce Commission's recapture fund, without filing a protest against the tentative recapture report in which it was found that it had earned excess income for the years 1922, 1923, 1925 and 1926. The commission has now made the tentative report final.

CHICAGO & NORTH WESTERN.—*Notes.*—This company has been authorized by the Interstate Commerce Commission to issue $16,000 of general mortgage 4½ per cent bonds and $19,089,000 of first mortgage bonds as collateral for short-term notes.

CHICAGO & NORTH WESTERN.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability for $195,000 of its equipment trust of 1929 series Y 4½ per cent certificates, to be pledged as collateral security for short term notes.

CHICAGO, ROCK ISLAND & PACIFIC.—*Defers Action on Preferred.*—The directors of this company have deferred action on the semi-annual dividend of $3 on its 6 per cent preferred stock and of $3.50 on its 7 per cent preferred, due at this time. Both issues are cumulative at $5 per year. Chairman Hayden explained that "the best dividend that could be paid to preferred stockholders at this time is to keep the company in strong financial position. Pending the completion of negotiations for increased rates and decreases in wages, it seems the part of wisdom to conserve the company's cash position."

ERIE.—*Notes.*—This company has applied to the Interstate Commerce Commission for authority to pledge $12,000,000 of first consolidated mortgage general lien 4 per cent bonds as collateral for short term notes to meet its nearby requirements.

MINNEAPOLIS, RED LAKE & MANITOBA.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its entire line from Redby, Minn., to Bemidgi, 33 miles.

MISSOURI PACIFIC.—*Control of Doniphan, Kensett & Searcy.*—The Interstate Commerce Commission has authorized this company to acquire control of the Doniphan, Kensett & Searcy by purchase of its capital stock.

NEW YORK, CHICAGO & ST. LOUIS.—*Bonds.*—The Interstate Commerce Commission has authorized this company to pledge $4,500,000 of refunding mortgage 4½ per cent bonds, heretofore authorized to be authenticated and delivered, as collateral for short term notes.

NORTHERN ALABAMA.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a branch line extending from a connection with the Southern at Riverton Jct., Ala., northward to Riverton, 10.9 miles.

OIL FIELDS SHORT LINE.—*Recapture Report.*—The Interstate Commerce Commission has made final, in the absence of a protest, its tentative recapture report finding that this company had earned in excess of 6 per cent for the last four months of 1920, and ordered the company to pay $2,497, representing half the excess, into its general railroad contingent fund. The line was dismantled in 1924.

PENNSYLVANIA. — *Director Application Withdrawn.*—F. C. Dumaine, of Groton, Mass., has withdrawn his application to the Interstate Commerce Commission for authority to serve as a director of the Pennsylvania while serving also as director of the New York, New Haven & Hartford.

PITTSBURGH & WEST VIRGINIA.—*Notes.*—This company has applied to the Interstate Commerce Commission for authority to increase from 4½ per cent to 6 per cent the interest rate on $4,700,000 of short-term notes maturing at various dates prior to June 30, 1933, secured by $5,000,000 of first mortgage bonds, which it is proposed to renew.

Dividends Declared

Atlantic Coast Line.—$1.00, quarterly, payable December 10 to holders of record November 30.

Boston & Albany.—$2.25, quarterly, payable December 31 to holders of record November 30.

Boston & Providence.—2½ per cent, quarterly, payable January 2 to holders of record December 19.

Chesapeake & Ohio.—Common, 62½c, quarterly, payable January 1 to holders of record December 8.

Erie & Pittsburgh.—87½c, payable December 10 to holders of record November 30.

Mobile & Birmingham.—Preferred, $2.00, payable January 2 to holders of record December 2 to January 1.

Reading.—Preferred, 50c, quarterly, payable January 14 to holders of record December 24.

Average Prices of Stocks and of Bonds

	Dec. 1	Last week	Last year
Average price of 20 representative railway stocks..	36.43	39.00	91.72
Average price of 20 representative railway bonds..	70.30	73.23	92.37

Railway Officers

EXECUTIVE

Charles F. Myers, executive vice-president of the International Railways of Central America, has been elected president, succeeding **Fred Lavis,** and **Whitney Sheppardson** has been elected vice-president.

Meade T. Spicer, executive assistant to the president of the Chesapeake & Ohio, will retire from active service at the close of the current year. He was born at Fredericks Hall, Va., on February 11, 1869, and received his education at private and public schools. Mr. Spicer's connection with the C. & O. covers a period of 46 continuous years. He first entered railroad service in 1885, as messenger in the train dispatcher's office at Richmond, Va. Later in that year he was promoted to telegraph operator, and in 1889 he was advanced to clerk and stenographer to the superintendent of telegraph. In 1892, he became secretary to superintendent, and later in the same year he was appointed secretary to the general manager. In 1898, Mr. Spicer was appointed chief clerk to the general manager, and in 1900, chief clerk to the president. In 1910 he was also appointed assistant secretary of the C. & O. In 1917, he became executive assistant to the president, which duties he will relinquish upon his retirement. During the period of Federal control, Mr. Spicer served as office assistant to the federal manager of the C. & O.

J. T. Morrison, who has been elected president of the Pullman Railroad, Chicago, as noted in the *Railway Age* for November 28, obtained his railway experience in the traffic departments of a

J. T. Morrison

number of roads. He was born on October 12, 1870, at Liberty, Mo., and was educated in the public schools of St. Joseph, Mo. He commenced his railway career in 1890, as an office boy in

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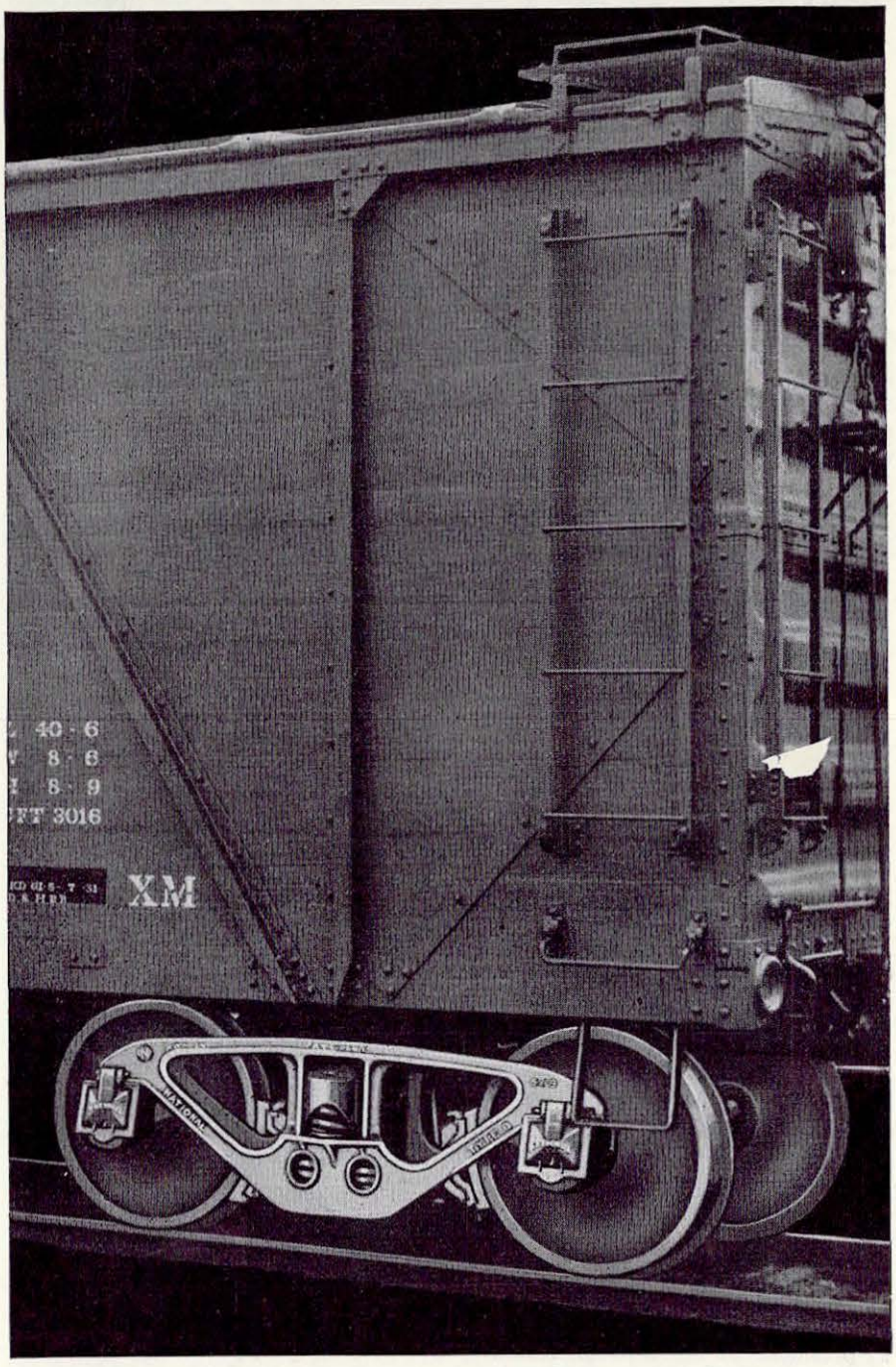
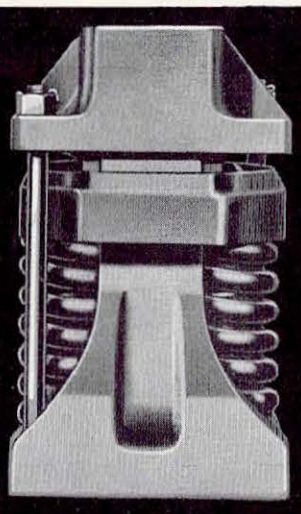
TRUCKS ››› that Speed Train Operation

...TRUCKS THAT SPEED TRAIN OPERATION...

NATIONAL Type B trucks speed train operation by providing greater strength and less weight, thus permitting increased revenue loads. Their increased spring capacity (42% in excess of A.R.A. requirements) is a protection to roadbed, lading and equipment. Their design, which permits quick wheel change, speeds maintenance work. Cars equipped with National Type B trucks give more days per year of profitable service. Full details on request.





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National Draft Gear
Another contribution by National to profitable freight operation. This gear stands first in the combination of capacity, sturdiness and endurance.

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General Offices: CLEVELAND, OHIO
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NATIONAL TYPE M&S B TRUCKS

the traffic department of the Chicago, Burlington & Quincy, at St. Joseph, later being transferred to St. Louis, Mo. In 1894, Mr. Morrison left this road to become traveling freight agent at St. Louis for the Chicago, Milwaukee, St. Paul & Pacific, being appointed chief clerk in the general freight office at Chicago in 1896. He remained in this position until 1912, when he went with the Pullman Railroad as traffic manager, with which company he has been associated continuously since. In 1914 he was elected vice-president, which position he held until his recent election as president, effective on November 10.

Richmond Dean, whose retirement as senior vice-president of the Pullman Company, Chicago, and as president of the Pullman Railroad, was noted in the *Railway Age* of November 28, was born on November 2, 1862, at St. Louis, Mo. After a public school education, Mr. Dean became connected with the Boatmen's bank at St. Louis in 1875, subsequently going with the Missouri Pacific as a clerk at St. Louis. He remained with

Richmond Dean

the Missouri Pacific until 1882, when he joined the Pullman Company as a clerk at St. Louis, being subsequently appointed assistant superintendent at that point. In 1888, Mr. Dean was sent to Chicago as secretary to the general superintendent, later being made assistant superintendent. He left this company in 1894 to become assistant to the vice-president of the Missouri-Kansas-Texas at St. Louis, but returned to the Pullman Company in 1899 as assistant to the vice-president. He was promoted to general manager at Chicago in 1905, and in 1915 he was elected vice-president, which position he held until his retirement, which was effective on November 2. Since 1905, Mr. Dean had also been president of the Pullman Railroad.

OPERATING

J. W. Thomas has been appointed assistant superintendent of the Shenandoah division of the Norfolk & Western, with headquarters at Roanoke, Va.

A. L. Coey, superintendent of the Salt Lake division of the Los Angeles & Salt Lake, with headquarters at Salt Lake City, Utah, has had his jurisdiction extended to include the Los Angeles division, succeeding **W. H. Smith,** who has been appointed assistant superintendent, with headquarters as before at Los Angeles, Cal. Mr. Coey's jurisdiction now extends over the entire railroad.

The San Antonio division of the Southern Pacific Lines in Texas and Louisiana has been extended to embrace the El Paso division and the Lockhart branch of the Austin division, which extends between Shiner Junction, Tex., and Lockhart. The Victoria division has been extended to include portions of the San Antonio division as follows: The Cuero sub-division between Salado Jct., Tex., and Victoria; the Kenedy sub-division between Kenedy, Tex., and Yoakum; the Yoakum terminal, and that part of the Yoakum sub-division between Yoakum and Eagle Lake, Tex. **C. R. Morrill,** superintendent of the El Paso division, with headquarters at El Paso, Tex., has been transferred to the San Antonio division, with headquarters at San Antonio, Tex., to succeed **G. B. Goodloe,** who has been transferred to the Houston division, with headquarters at Houston, Tex. Mr. Goodloe succeeds **H. J. Micksch,** who has been appointed assistant to the general manager, with headquarters at Houston. **K. C. Marshall,** superintendent of terminals at Houston, has been appointed senior assistant superintendent at the same point, and the position of superintendent of terminals has been abolished.

TRAFFIC

T. G. Taggart, chief clerk in the office of the president of the Illinois Central, at Chicago, has been promoted to assistant general passenger agent, at the same point, a newly-created position.

A. T. Stovall, Jr., has been appointed assistant foreign freight traffic manager of the Southern, with headquarters at Louisville, Ky., and **Rafael Garcia** has been appointed freight and passenger agent at Havana, Cuba.

ENGINEERING AND SIGNALING

Following the merging of the El Paso division of the Southern Pacific Lines in Texas and Louisiana with the San Antonio division, **J. H. Knowles,** division engineer of the former division, with headquarters at El Paso, Tex., has been transferred to the San Antonio division, with headquarters at San Antonio, Tex., where he succeeds **C. M. Staples,** who has been transferred to the Houston division, with headquarters at Houston, Tex. Mr. Staples replaces **G. A. Boyer,** who has been assigned to other duties.

C. G. Grove, division engineer of the St. Louis division of the Pennsylvania, with headquarters at Terre Haute, Ind., has been transferred to the Panhandle division, with headquarters at Pittsburgh, Pa., where he succeeds **T. E. Nestor,** who has been transferred to the Monongahela division at Uniontown, Pa. Mr. Nestor succeeds **W. S. Wilson,** who has been transferred to the Conemaugh division, with headquarters at Pittsburgh, where he replaces **A. H. Tasker,** who has been transferred to the Buffalo division, with headquarters at Buffalo, N. Y. Mr. Tasker succeeds **N. M. Lawrence,** who has been transferred to the St. Louis division at Terre Haute, to replace Mr. Grove.

PURCHASES AND STORES

W. J. Duff, assistant stationer of the Atchison, Topeka & Santa Fe, has been promoted to stationer, with headquarters as before at Topeka, Kan., to succeed **F. A. Wilson,** deceased, and the position of assistant stationer has been discontinued.

P. Hunter, assistant purchasing agent of the Chicago, Burlington & Quincy, has been promoted to purchasing agent, with headquarters as before at Chicago, to succeed **E. F. Hasbrook,** who died on November 22, as noted in the *Railway Age* for November 28. **J. G. Stuart,** general storekeeper at Chicago, has been promoted to assistant purchasing agent to succeed Mr. Hunter. **R. D. Long,** assistant general storekeeper, has been advanced to general storekeeper, to replace Mr. Stuart, and the position of assistant general storekeeper has been discontined. These changes became effective on December 1.

Mr. Hunter has been with the purchasing department of the Burlington at Chicago for about 28 years. He was born on December 16, 1874, at Charles-

P. Hunter

ton, S. C., and was educated in law at the Chicago College of Law. After practicing his profession for a time, Mr. Hunter entered railway service as a clerk in the stores department of the Burlington at Chicago, in April, 1903.

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Now is the time to check your stocks

WINTER is here—traffic delays are bound to occur—deliveries will be uncertain—now is the time to check your stocks and make sure that you have enough HUNT-SPILLER GUN IRON Castings to meet the requirements of every shop and engine terminal during the cold winter months.

If you are not using Castings made of HUNT-SPILLER *Air Furnace* GUN IRON, now is the time to investigate their wear-resisting properties which will give your road the following economies:

Savings in fuel—savings in maintenance—savings in machining costs. Assurance of greater locomotive efficiency—fewer renewals and greater net revenues at the end of the year.

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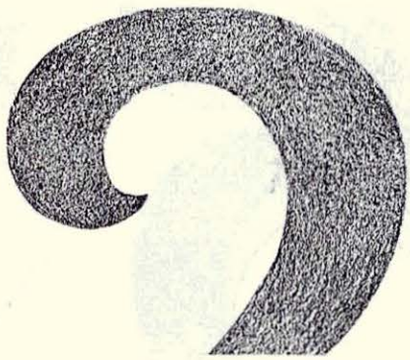
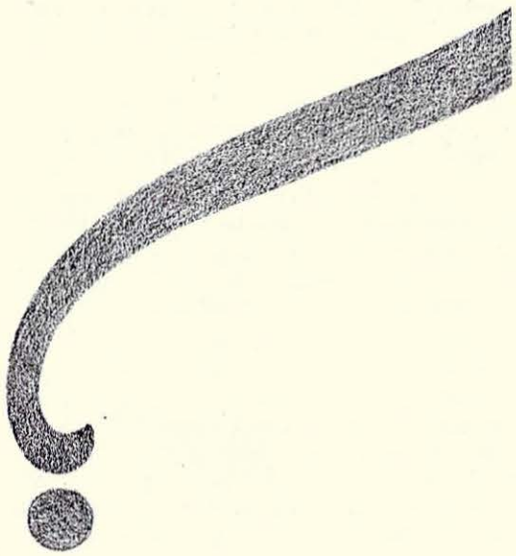
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

HUNT-SPILLER GUN IRON

Air Furnace



Are YOU Prepared



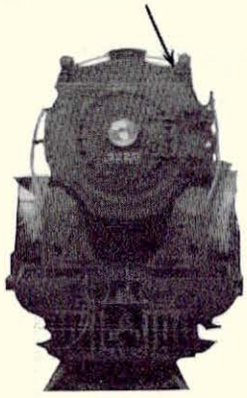
With car loadings at 20 per cent of normal, only the best of power is handling transportation. Car loadings—train loadings—train schedules—demand first line power whenever possible to reduce operating cost.

But with increased business, the railroads will be faced with the problem of moving heavy tonnage rapidly and economically. This will necessitate first class power, properly equipped and properly maintained. Now is the time to prepare for this demand by modernizing locomotives through the application of Elesco feed water heaters.

It is practical to apply Elesco feed water heaters to locomotives scheduled for retirement within two or three years. During this time they will provide marked savings and when the retirement date comes the feed water heaters may easily and quickly be transferred to other locomotives of equal boiler capacity.

Consider the application of Elesco feed water heaters to your existing power now. *Prepare* for increased business.

THE ELESCO FEED WATER HEATER



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Superheaters *Feed Water Heaters* *Exhaust Steam Injectors* *Superheated Steam Pyrometers*

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WINTER is here—traffic delays are bound to occur—deliveries will be uncertain—now is the time to check your stocks and make sure that you have enough HUNT-SPILLER GUN IRON Castings to meet the requirements of every shop and engine terminal during the cold winter months.

If you are not using Castings made of HUNT-SPILLER *Air Furnace* GUN IRON, now is the time to investigate their wear-resisting properties which will give your road the following economies:

Savings in fuel—savings in maintenance—savings in machining costs. Assurance of greater locomotive efficiency—fewer renewals and greater net revenues at the end of the year.

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Cylinder Snap Rings
Valve Rings All Shapes

HUNT-SPILLER GUN IRON

Air Furnace

A few months later he was transferred to the purchasing department and was advanced through various positions in that department until October 1, 1918, when he was promoted to assistant purchasing agent, which position he has held until his recent promotion to purchasing agent.

Mr. Stuart has been connected with the stores department of the Burlington for 44 years. He was born at Aurora, Ill., 60 years ago, and after a high school and commercial college education he entered the service of the Burlington in 1887, as a laborer at the Aurora store. In 1888, he was made shipping notice clerk at the same point, being promoted to storekeeper of the Western avenue (Chicago) store a year later. In 1891, Mr. Stuart returned to the Aurora store as an invoice clerk, being again appointed shipping notice clerk at that point in 1892. Seven years later he was advanced to chief clerk at the Aurora store, which position he held until 1905, when he was sent to Hannibal, Mo., as storekeeper. A year later he was transferred to West Burlington, Iowa, and in May, 1907, he was appointed inspector of stores at Chicago. In 1909, Mr. Stuart was advanced to assistant general storekeeper, with headquarters at Chicago, holding this position until February 1, 1910, when he was further promoted to general storekeeper. He held this position continuously until his recent promotion to assistant purchasing agent, with the exception of a period during federal control of the railroads when he was supervisor of stores of the Central Western region. Mr. Stuart is a past president of the Railway Storekeepers' Association, which position he held during 1915-16.

J. G. Stuart

Mr. Long's connection with the Burlington dates back 39 years. He was born at Aurora, Ill., on February 22, 1877, and commenced his service with the Burlington on November 1, 1892, as a messenger at the Aurora store. In March, 1901, after having held various positions at that point, he was promoted to foreman, which position he held until October, 1906, when he was advanced to chief clerk at the Aurora store. Mr. Long was transferred to the office of the general storekeeper at Chicago on February 1, 1910. Four years later he was promoted to assistant general storekeeper at that point, which position he has held continuously until his recent promotion to general storekeeper.

R. D. Long

OBITUARY

Charles F. Murphy, superintendent of the Butte, Anaconda & Pacific, with headquarters at Anaconda, Mont., died at that point on November 9.

Louis A. Lambert, retired auditor coal and coke receipts of the Baltimore & Ohio, died at his home in Baltimore, Md., on November 3, at the age of 75 years.

R. J. Carmichael, who retired several months ago as assistant general passenger agent of the Illinois Central, at Memphis, Tenn., died at that point on November 29.

Edgar Yungman, assistant general passenger agent of the Pennsylvania, with headquarters at Philadelphia, Pa., died November 30, after a short illness, at his home in Germantown, a suburb of Philadelphia. He was 64 years old.

J. F. Deems, who resigned as general superintendent of motive power, rolling stock and machinery of the New York Central Lines in 1911, and who at one time was general superintendent of the Schenectady works of the American Locomotive Company, died on November 24, at Burlington, Iowa.

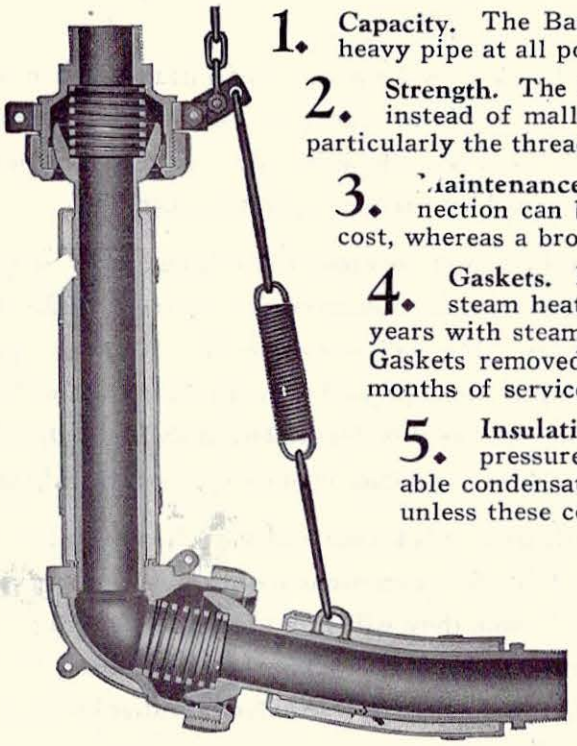
John H. Carroll, for many years Washington representative in legislative matters of the Great Northern, the Northern Pacific, the Chicago, Burlington & Quincy, the Baltimore & Ohio and other railroads, and of various other corporations, died at Washington on November 29. Before going to Washington he was general attorney of the Burlington at St. Louis.

F. H. Hamilton, vice-president, secretary and treasurer of the St. Louis-San Francisco, who died on November 23, as noted in the *Railway Age* for November 28, had been connected with the Frisco for about 43 years. He was born in 1865, in New York City, and was educated in private schools at Lycee Condorcet (now Lycee Fontane), at Paris, France. Mr. Hamilton entered railway service in 1883, as secretary to the general agent of the express department of the Baltimore & Ohio, at New York, leaving this road in 1888 to become clerk to the second vice-president of the St. Louis & San Francisco (now the S. L.-S. F.). Two years later he was promoted to chief clerk to the vice-president, with headquarters at Boston, also serving for a time as acting comptroller. From March to December, 1893, Mr. Hamilton served as departmental comptroller, later being appointed cashier for the receivers of the same road. In 1896 he was appointed secretary and treasurer for the reorganized company, which position he held until 1913, when he was appointed treasurer under another receivership. Three years later, following the reorganization of the Frisco, he was again made secretary and treasurer holding this position until 1918, when he was made federal treasurer. Since 1921, Mr. Hamilton has been vice-president, secretary and treasurer, with headquarters at St. Louis, Mo.

F. H. Hamilton

The Rutland Transportation Company, highway subsidiary of the Rutland, has been authorized by the New York Public Service Commission to discontinue the operation of its bus line between Chatham, N. Y. and the New York-Vermont state line. This entire route was operated from Chatham to Bennington, Vt., for the purpose of affording bus service in substitution for passenger service formerly given by mixed trains which the railroad discontinued when the bus route was authorized. Since its inception in 1926 the bus has operated one round trip daily. The company contended that its loss from the bus operation amounted to more than $27,000 in five years. At no time has the operation been profitable.

5 Reasons for selecting BARCO Car Steam Heat Connections



1. **Capacity.** The Barco connection has the full capacity of 2 in. extra heavy pipe at all points eliminating all 90 deg. bends.

2. **Strength.** The Barco connection is made almost entirely of steel instead of malleable iron. This renders it less likely to damage, particularly the threaded ends, small lugs, etc.

3. **Maintenance.** In the event of breakage or wear, the Barco connection can be welded or built up and reclaimed at very little cost, whereas a broken casting must be scrapped and replaced.

4. **Gaskets.** Barco gaskets of the same material as that used in steam heat connections have been in satisfactory use for 15 years with steam pressures up to and including 350 lbs. per sq. in. Gaskets removed from Barco car steam heat connections after 15 months of service have been found in excellent condition.

5. **Insulation.** While metallic connections will allow higher pressures to be used without danger of bursting, considerable condensation is encountered on long trains in cold weather unless these connections are satisfactorily insulated. Barco connections are covered with felt asbestos insulation which in turn is covered with a steel casing to protect this insulation from damage in handling and from the weather, dust, grit, etc.

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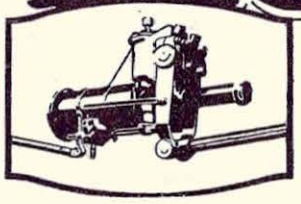

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Are YOU Prepared

With car loadings at 20 per cent of normal, only the best of power is handling transportation. Car loadings—train loadings—train schedules—demand first line power whenever possible to reduce operating cost.

But with increased business, the railroads will be faced with the problem of moving heavy tonnage rapidly and economically. This will necessitate first class power, properly equipped and properly maintained. Now is the time to prepare for this demand by modernizing locomotives through the application of Elesco feed water heaters.

It is practical to apply Elesco feed water heaters to locomotives scheduled for retirement within two or three years. During this time they will provide marked savings and when the retirement date comes the feed water heaters may easily and quickly be transferred to other locomotives of equal boiler capacity.

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THE ELESCO FEED WATER HEATER

THE SUPERHEATER COMPANY

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Peoples Gas Building
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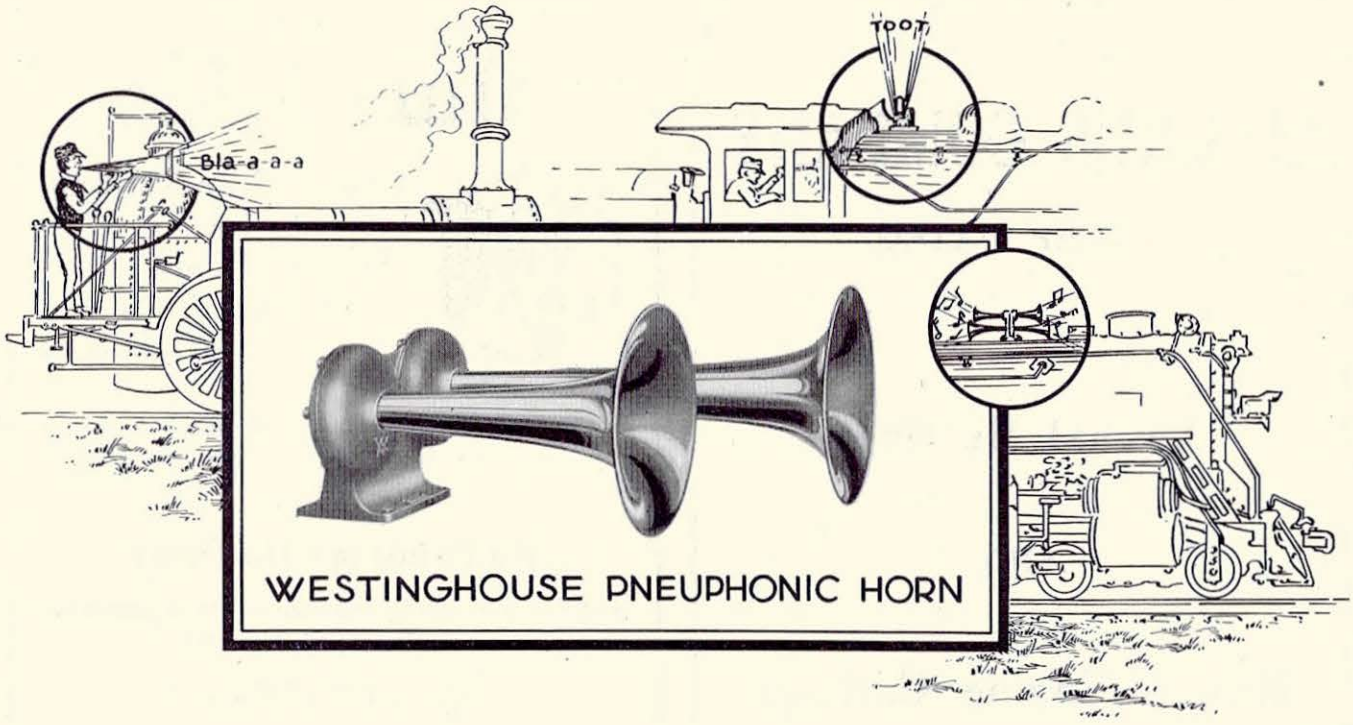
Superheaters *Feed Water Heaters* *Exhaust Steam Injectors* *Superheated Steam Pyrometers*



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THE engineer had to blow his own horn in the "early days" to give warning of the train's approach to highway crossings . . . Obviously, the blare of a tin horn signal was inadequate because, to obtain the necessary volume and duration of sound taxed the lung capacity of even the most "husky" man.

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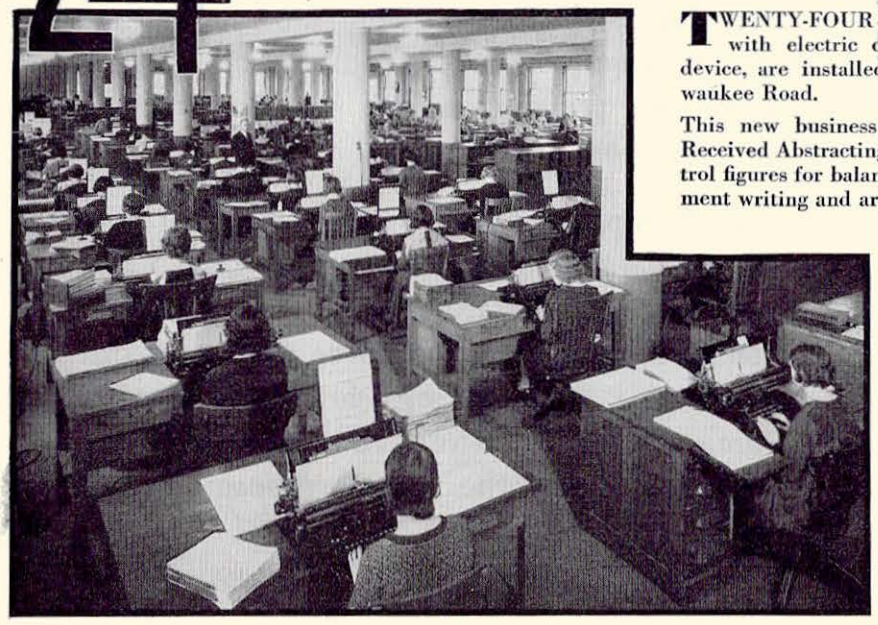

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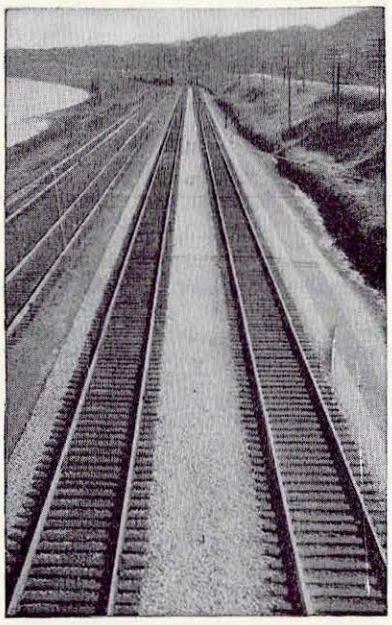

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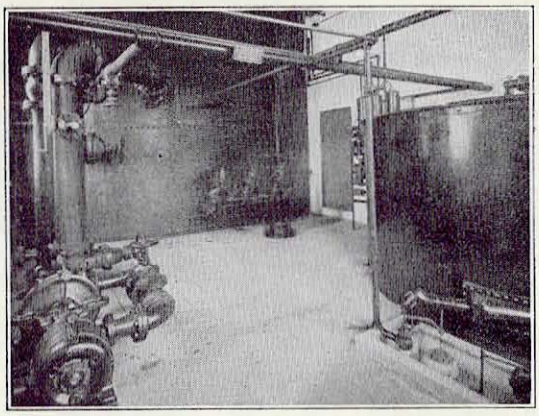

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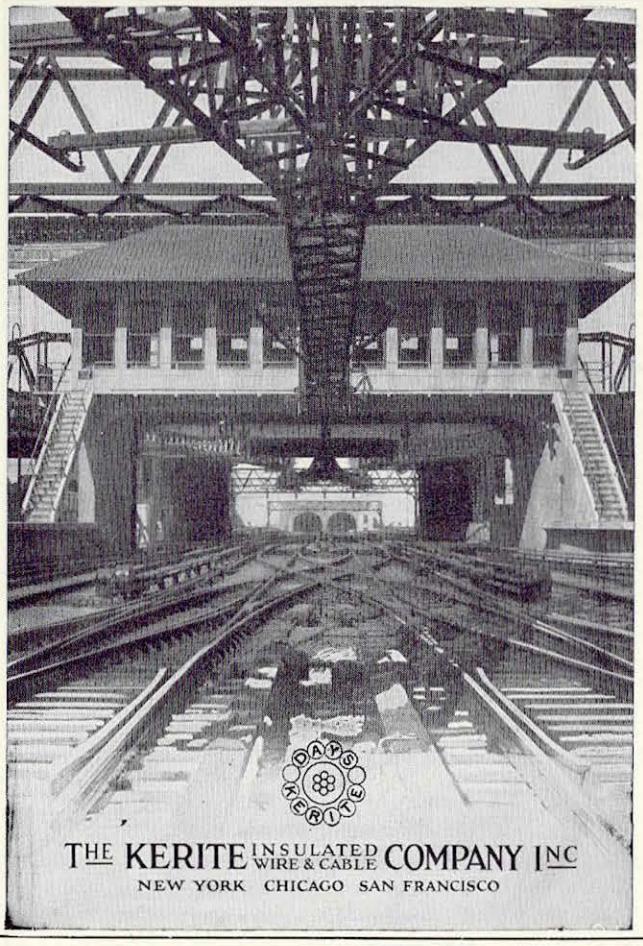

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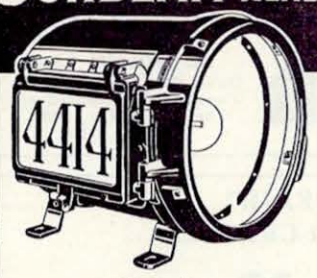

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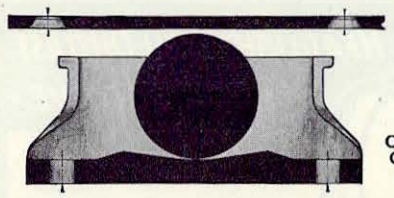
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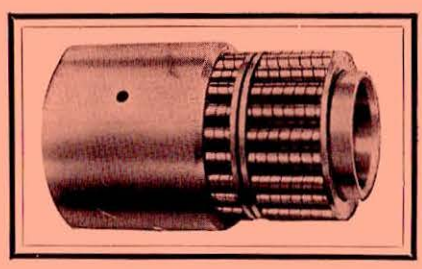

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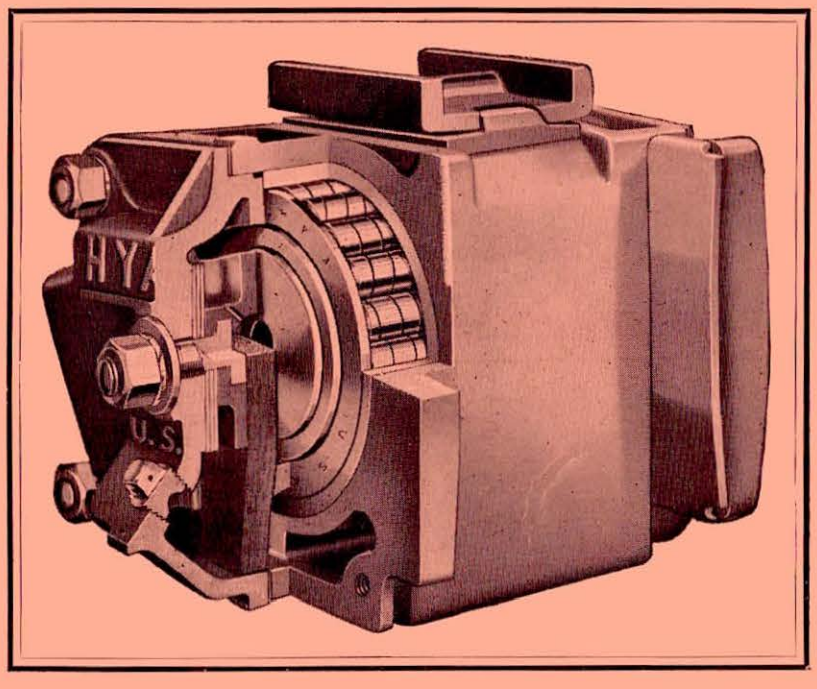

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**Excerpt from "Improvement in Freight Train Performance by 47 Roads," Railway Age, August 15, 1931. Copy on request.*

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